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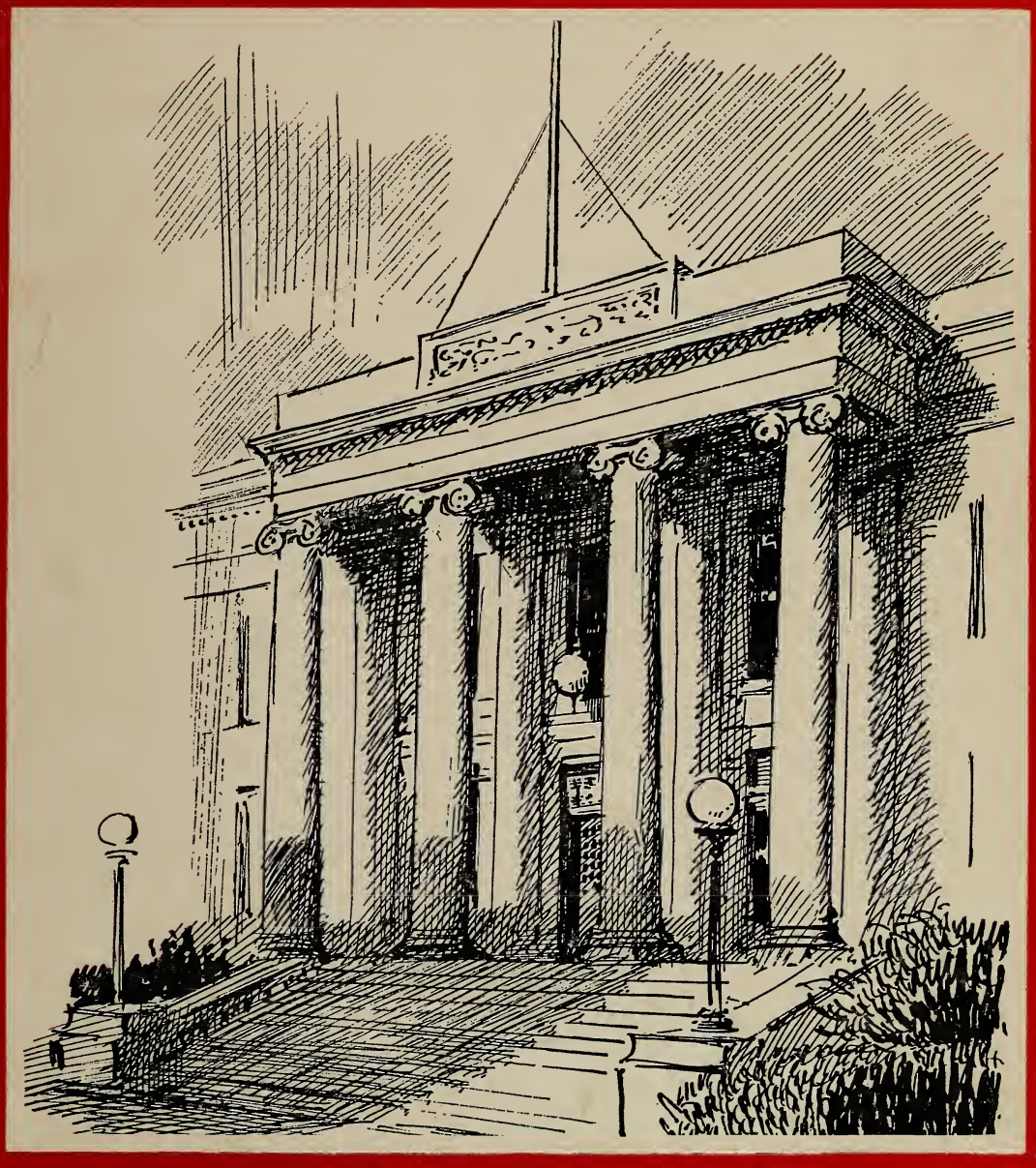

The Harvard School of Public Health

COURSES OF INSTRUCTION FOR THE YEAR 1953–54

OFFICIAL REGISTER OF HARVARD UNIVERSITY

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THE HARVARD SCHOOL OF PUBLIC HEALTH

COURSES OF INSTRUCTION
1953–54

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Boston, Massachusetts

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JANE WORCESTER, A.B., DR.P.H., *Biostatistics.*

ERICH LINDEMANN, PH.D., M.D., *Public Health Practice.*

JOHANNES IPSEN, C.A., C.M., DR.MED., M.P.H., *Public Health.***

THEODORE HUNT INGALLS, A.B., M.D., *Epidemiology.*

ROBERT BALENTINE REED, PH.D., *Biostatistics.*

* Resigned, effective September 1, 1953.

** Dr. Ipsen is Superintendent of the Institute of Laboratories of the Massachusetts Department of Public Health. He is not assigned to any department.

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Bertha Shapley Burke, a.m., *Maternal and Child Health.*

Elizabeth Prince Rice, a.b., s.m., *Maternal and Child Health.*

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Norbert Anton Wilhelm, s.b., m.d., *Public Health Practice.*

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(Absent 1953–54)

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Thomas Feger Pugh, m.d., m.p.h., *Epidemiology.*

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Jere Mead, s.b., m.d., *Physiology.*

Beryl Josephine Roberts, ed.m., m.p.h., *Public Health Practice.*

Margaret Livingston Varley, s.b., m.p.h., *Public Health Practice.*

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Warren Taylor Vaughan, Jr., s.b., m.d., *Public Health Practice.*

Associates

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Robert Shih-man Chang, s.b., m.d., s.d. in hyg., *Microbiology.*

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Gerald Caplan, b.sc., m.b., ch.b., m.d., *Public Health Practice.*

Claire Frances Ryder, a.b., m.d., m.p.h., *Public Health Practice.*

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Instructors

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Harben Jay Boutourline-Young, m.b.,b.s., m.d., *Physiology.* (Absent 1953–54)

Ruth Margaret Butler, a.b., s.m., *Maternal and Child Health.*

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Manon McGinnis, a.b., *Public Health Practice.*

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Leon Ezra Kruger, s.b., m.d., *Physiology.*

Hideo Kusama, m.d., *Microbiology.*

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MALCOLM BRYCE MCILROY, B.A., M.D., *Physiology.*

Assistants

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MARGARET ELIZABETH DROLETTE, A.B., *Biostatistics.*

JUDITH CAROL MILLER, S.B., *Microbiology.* (Leave of absence from September 1, 1953)

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HELEN SCRUFUTIS LOCKHART, S.B., ED.M., *Nutrition.*

MARJORIE PARSONS, S.B., *Maternal and Child Health.*

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1952–53

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Federal Security Agency

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U. S. Public Health Service

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Clinical Professor of Neurosurgery,
University of Louisville School of Medicine

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Executive Director
Beth Israel Hospital

HUNTINGTON WILLIAMS, M.D. — Baltimore, Maryland
Commissioner of Health
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Merck & Co., Inc.
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Sharp & Dohme, Inc.
Socony-Vacuum Oil Company, Inc.
Sterling-Winthrop Research Institute
United Fruit Company
The Upjohn Company
Association for the Aid of Crippled Children
Mr. T. Roland Berner
East Asiatic Society
The Grant Foundation, Inc.
Charles H. Hood Dairy Foundation
J. M. Kaplan, President of The J. M. Kaplan Fund, Inc. and The Welch Grape Juice Company, Inc.
W. K. Kellogg Foundation
Albert and Mary Lasker Foundation, Inc.
National Association of Automotive Mutual Insurance Companies
National Foundation for Infantile Paralysis
National Tuberculosis Association American Trudeau Society
National Vitamin Foundation
The Procter & Gamble Fund
Russell Sage Foundation
Mr. A. M. Sonnabend
Sugar Research Foundation, Inc.
Wheat Flour Institute

INTRODUCTION

The Harvard School of Public Health is one of the ten institutions in the United States which are accredited centers for postgraduate education in public health. It operates as an independent unit of the University although it is closely associated with the Medical School, the Dental School and the various Harvard hospitals. As a postgraduate institution the School's major objectives include teaching, research and community service in all aspects of modern public health. The curriculum is presented in detail in another section of the Catalogue and it is the purpose of this introduction to indicate in a general way the opportunities for postgraduate training for students who have a background in one or more of the various disciplines which form the basis of public health.

Public health is concerned with maintaining and improving the physical and mental health of the population. It deals with groups of people, communities, or entire populations. In this emphasis on the community as a whole, public health differs from preventive medicine as applied to the individual. Throughout history the need for preventive medicine has been recognized by physicians and laymen alike. When adequate knowledge in the basic sciences finally became available in the past century, rapid progress was made in the direction of maintaining and improving the health of individuals. An early step to meet the need for instruction of medical students in this new field came in 1909 when a separate department of preventive medicine was established in the Harvard Medical School. More recently the concepts of preventive medicine for the individual have been broadened and extended into the new profession of public health. In 1913 Harvard University, acting jointly with the Massachusetts Institute of Technology, established the first American school for health officers, from which, in 1922, Harvard developed its present School of Public Health.

The main objective of the teaching program of the Harvard School

of Public Health is to train and develop the leaders who are needed to plan, organize, and operate public health programs for official and private health agencies, for industries, for the Armed Forces, and for governmental units — local, state, and national. Furthermore, the School instructs various specialists who participate in the operation of health programs, including epidemiologists, microbiologists, biostatisticians, nutritionists, industrial hygienists, and environmental physiologists. Many of its graduates become administrators of important activities in industrial health, maternal and child health, mental health, medical care, control of cancer, tuberculosis, venereal diseases, and tropical diseases. Other graduates become teachers and research workers in this and other schools of public health and in departments of preventive medicine in medical schools.

The major part of the curriculum is devoted to the courses leading to the degree of Master of Public Health which is intended primarily for graduates in medicine, dentistry, veterinary medicine, or allied professions. The courses are also open to students who have satisfactory preparation in the basic medical sciences and who have developed an understanding of community problems by working in a public health field. The work requires one academic year of study, during which the students acquire a clear understanding of the fundamental principles of public health sciences and an appreciation of their application in special fields of work. It also provides an opportunity for concentrated study in one of these special fields with a corresponding mastery of its technics.

For students who do not have an extensive foundation in the basic medical sciences and who have not had experience in public health but are interested in developing competence in some specialty of public health, programs of study are available leading to the degree of Master of Science in Hygiene. These programs provide an opportunity for intensive training in some specific field of public health. Each individual program is designed to fit the student's previous background and his need for further development. An effort is made to emphasize the relation of the student's specialty to public health as a whole.

Physicians who are interested primarily in those aspects of public health which are of particular concern to industry may register at the School for a one year program which leads to the degree of Master of Industrial Health. This program includes instruction in basic public health sciences but allows time for concentration in subjects of more immediate interest to the physician who is engaged in industrial medicine and health and who must understand the principles of personnel management and of industrial health hazards as well as the clinical aspects of his work.

The programs which lead to the advanced degrees of Doctor of Public Health and of Doctor of Science in Hygiene are based on individual research and the preparation of a thesis embodying an original contribution to knowledge. Candidates for these degrees must have completed the work required for the corresponding master's degrees and must have demonstrated a high degree of competence, scientific ability and imagination.

Subject to limitations of space, the School is prepared to accept a small number of qualified students who are not candidates for degrees, but who are interested in following special programs of various kinds. For example, industrial physicians may arrange a concentrated program of post graduate training in industrial health during the eight weeks of the third period of the year.

The Harvard School of Public Health is a center of post graduate education, research, and community service in public health. Its graduates are active in important public health positions over the world. Its research program extends from the basic laboratory sciences to the surrounding communities. Its faculty contributes to the activities of many voluntary, governmental, industrial and military health agencies.

FACILITIES

Most departments of the School of Public Health are housed in two buildings in the same block: one at 55 Shattuck Street, the other at 695 Huntington Avenue, Boston (15). The administrative

offices are in the former building. Between the School's two buildings are the Harvard Medical and Dental Schools; the Children's Medical Center is next door, the Peter Bent Brigham Hospital is across the street and the Lying-in Hospital and Vanderbilt Hall are a block away. The latter is a dormitory for medical students, where students of the School of Public Health may make arrangements to eat.

The facilities of the hospitals and of the Harvard Medical School are available to qualified students of this School, and are used in connection with the teaching of various subjects. In addition, students enrolled at the School may take courses in other departments of Harvard University. Students frequently enroll for work in the fields of sociology, public administration, business administration and medical sciences. Certain graduate courses at the Massachusetts Institute of Technology are also open to students of this School.

The Department of Sanitary Engineering of the School is also part of the Division of Applied Science of the Graduate School. The basic course for students of the School of Public Health is taught here, but students may also register for certain special and advanced courses in Sanitary Engineering given in Cambridge.

Of particular interest to students of this school is the close contact with various health agencies in Massachusetts and elsewhere. The divisions of the Massachusetts Department of Public Health not only furnish opportunities for observation and training in their fields, but their staffs enter into the teaching of courses at the School. Administrative methods at local levels may be studied at first hand in the health departments of the cities of Newton and Cambridge and the Town of Brookline, the directors of which are also faculty members and take active part in course teaching.

There are two special areas for study and training purposes closely linked to the School. The Whittier Street Health Center, a district health unit of the Boston City Health Department, is being developed with the aid of a grant from the Commonwealth Fund and will be used not only for purposes of demonstration and training

but also as a field for research in problems of administration, of sociology and of human ecology in general. The other special area includes the territory covered by the Nashoba Associated Boards of Health and the urban community of Leominster, some 30 miles from the School. It furnishes opportunities for the investigation of rural problems and administrative methods, supplementing those offered by Whittier Street.

The Institute of Laboratories of the Massachusetts Department of Public Health is engaged in a program of general interest, attracting visitors and students from various parts of the United States and from foreign countries. It not only performs a wide variety of standard bacteriological, immunological and chemical procedures, but is actively engaged in several research programs. Its Superintendent is a member of the School's faculty. This close contact with one of the country's outstanding laboratories provides unsurpassed opportunities for qualified students who wish to obtain intensive experience in many types of laboratory methods of particular pertinence to public health.

In general, the location of the Harvard School of Public Health places it in one of the great medical and industrial centers of this country. Clinical subjects, medical care and hospital administration may be studied at first hand. The many large and small industrial organizations permit the observation and investigation of a wide range of problems of industrial hygiene.

Libraries

The joint Library of the School of Public Health and the Harvard Medical School is on the second floor of the Administration Building of the Medical School. It is open from 9 a.m. until 10 p.m. on week days, from 9 a.m. until 5 p.m. on Saturdays, and from 2 p.m. until 6 p.m. on Sundays. There are at present 106,089 volumes, 208,289 pamphlets, and 739 current periodicals on file in this library.

Students also have the privilege of using the College Library in Cambridge, as well as the various departmental libraries belonging

to the University, in all of which there are over 4,000,000 volumes and pamphlets.

The Boston Public Library is open to students who are residents of Boston, and to students not residents of Boston who have filed a bond at the Bursar's office.

The Boston Medical Library, No. 8 The Fenway, contains about 207,000 bound volumes, 147,000 pamphlets, and 687 current periodicals on file. For those who desire to consult medical literature, this very valuable library is open on week days from 9 a.m. to 5 p.m., Saturdays 9 a.m. to 1 p.m., and on Mondays and Thursdays until 9 p.m., from the middle of October to the end of May.

COURSES OF STUDY AND DEGREES

Master of Public Health

Requirements for Admission

Students may apply for admission as candidates for the Master of Public Health degree if they are

(1) graduates of approved schools of medicine, dental medicine, veterinary medicine or nursing * *or*

(2) graduates in arts, sciences, or engineering with adequate training in the sciences basic to public health, who
   a. have completed at least one academic year of acceptable graduate study in a public health field, and who
   b. have had a period of acceptable experience in a responsible position in public health practice.

In exceptional circumstances the Administrative Board may admit unusually well qualified applicants in the second category who lack *a* or *b*.

* Graduates in nursing must (a) have obtained a college degree; (b) have completed their study in public health nursing or its equivalent in an approved University program; (c) have had public health nursing experience, some of which is on a supervisory level.

Requirements for the Degree

One academic year must be spent in residence at the University. The student must complete satisfactorily the required and elective courses to a total of 40 credit units. The general course entitled "Ecology: Biological and Social" and the basic courses in Biostatistics, Epidemiology, Public Health Practice, and Sanitary Engineering are required of all students unless they can demonstrate equivalent preparation. The schedule of courses is shown on pages 98 to 105.

By the end of the first period each student selects a field of special interest in which approximately one third of the year's work is to be taken. A faculty advisor assists each student in planning his program which is reviewed by the Committee on Degrees.

Upon completion of all required work the student takes a comprehensive examination in which he must demonstrate satisfactorily his ability to coordinate not only the basic subjects, but also various specialties in the field of public health.

Doctor of Public Health

For the degree of Doctor of Public Health the student must complete an approved program of independent and original investigation in a special field and must present the results of this research in an acceptable thesis.

Requirements for Admission

1. An applicant for admission to candidacy for this degree must be either (a) a graduate of an approved school of medicine, dental medicine or veterinary medicine, or (b) the holder of another doctoral degree in one of the basic sciences related to public health. In exceptional cases, an individual lacking a previous doctoral degree may be admitted if he has displayed outstanding ability in previous academic work and in practical public health experience.

2. The applicant must hold the degree of Master of Public Health

or its equivalent from a recognized institution and must indicate ability to undertake original investigation in a special field.

Requirements for the Degree

1. The student is required to complete a minimum of two semesters of resident research after he passes the qualifying examination. In exceptional cases the required work for the degree may be completed in this year, although generally, preparation of an acceptable thesis will require a longer period.

2. The candidate must possess a reading knowledge of at least one language, other than English, in which there exists a significant body of literature relevant to the candidate's field of study. The ability to read this language must be demonstrated before the candidate is permitted to take the qualifying examination.

3. After the applicant enters the School, an advisory committee is appointed to review his preparation in the chosen and related fields of study, to pass upon the plan of the proposed thesis, and to determine when the candidate is eligible to take the qualifying examination. This examination is oral, covers the basic public health sciences, and must be passed before the candidate is permitted to proceed with the thesis.

4. The advisory committee continues to supervise the student's research, including the preparation of his thesis.

5. When the advisory committee approves the thesis in draft form, the student then has it typed and bound. Three bound copies of the thesis must be deposited in the Dean's office at least four weeks before the date on which the final examination is to be held. Each copy must be accompanied by a summary not exceeding 1200 words in length, which shall indicate clearly the purposes, methods, and results of the investigation.

6. When the bound copies are received, along with a letter of approval by each member of the advisory committee, the Dean invites two members of any faculty of the University to read the thesis, to report to the Degrees Committee on the acceptability of the thesis, and to participate in the oral examination of the student.

7. If the thesis is accepted, the student is given an oral examination by the faculty. The examination is conducted by the Degrees Committee and covers the thesis as well as those public health subjects to which the thesis is related. Ordinarily this must be accomplished within five years after the qualifying examination is passed.

Master of Science in Hygiene

(With Designation of the Field of Concentration)

This degree is granted on fulfillment of a program of advanced work in one of the basic disciplines of public health. The courses taken must form an integrated plan of study in one branch of knowledge and allied subjects.

Requirements for Admission

An applicant for this degree must have received an academic degree from an institution of recognized standing, and must be prepared to do work at a graduate level in his field of concentration.

Requirements for the Degree

1. Two academic years of graduate work must be completed, one of which must have been spent in residence. A student with an exceptional record of accomplishment may be able to complete the requirements in less than two academic years. Decision on this point may be made by the Administrative Board at any time after the student completes one semester of residence, upon the recommendations of the Committee on Degrees and the department in which the student has his major interest.

2. The student must complete a program including the general course entitled "Ecology: Biological and Social" as well as the basic courses in Biostatistics and Epidemiology, unless he can demonstrate equivalent preparation. Elective courses must be approved by the Committee on Degrees on the recommendation of the head of the department in which the student wishes to concentrate. All courses in the primary and related fields of interest must be passed with an honor grade.

3. The student must pass with an honor grade a comprehensive examination in his principal and related fields of study. This examination is given after all required work is completed, ordinarily within three years after first enrollment in the School.

Doctor of Science in Hygiene

(With Designation of the Field of Concentration)

This degree is granted on successful completion of a program of independent and original research in one of the basic disciplines of public health.

Requirements for Admission

Candidates for the degree of Doctor of Science in Hygiene must have completed work equivalent to that required for the degree of Master of Science in Hygiene and must indicate ability to undertake original investigation in a special field.

Requirements for the Degree

1. The student is required to complete a *minimum* of two semesters of resident research after he passes the qualifying examination. In exceptional cases the required work for the degree may be completed in this year, although generally, preparation of an acceptable thesis will require a longer period.

2. The candidate must possess a reading knowledge of at least two languages, other than English, in which there exists a significant body of literature relevant to the candidate's field of study. The ability to read this language must be demonstrated before the candidate is permitted to take the qualifying examination.

3. After the applicant enters the School, an advisory committee is appointed to review his preparation in the chosen and related fields of study, to pass upon the plan of the proposed thesis, and to determine when the candidate is eligible to take the qualifying examination. This examination is oral, covers the chosen and related fields of study as well as the course work represented by the Master of Science in Hygiene degree, and must be passed before the candidate

is permitted to proceed with the thesis. Students who enroll in the School of Public Health with the intention of becoming doctorate candidates are expected to complete required courses and pass their qualifying examinations within three years, if not sooner, for full time students, or four years for part time students.

4. The advisory committee continues to supervise the student's research, including the preparation of his thesis.

5. When the advisory committee approves the thesis in draft form, the student then has it typed and bound. Three bound copies of the thesis must be deposited in the Dean's Office at least four weeks before the date on which the final examination is to be held. Each copy must be accompanied by a summary not exceeding 1200 words in length, which shall indicate clearly the purpose, methods, and results of the investigation.

6. When the bound copies are received, along with a letter of approval signed by each member of the advisory committee, the Dean invites two members of any faculty of the University to read the thesis, to report to the Degrees Committee on the acceptability of the thesis, and to participate in the oral examination of the student.

7. If the thesis is accepted, the student is given an oral examination by the faculty. The examination is conducted by the Degrees Committee and covers the thesis as well as those public health subjects to which the thesis is related. Ordinarily, this must be accomplished within five years after the qualifying examination is passed.

Master of Industrial Health

The course of training leading to the degree of Master of Industrial Health is designed to meet the increasing need for physicians qualified to plan, organize, and direct health programs for industry and labor.

Requirements for Admission

Candidates for this degree must be graduates of an acceptable school of medicine. Students from the United States should have completed an internship of at least twelve months in a hospital ap-

proved by the American Medical Association. While preference will be given to physicians who have had previous experience in industrial practice, the course is open to all qualified physicians.

Requirements for the Degree

1. One academic year, consisting of four eight-week periods, must be spent in residence at the University.

2. The student must complete 40 credit units satisfactorily. All candidates for the degree will be expected to take the following courses unless they can demonstrate equivalent preparation:

Industrial Medicine
- Basic Problems in Industrial Hygiene
- Industrial Medicine
- Industrial Medical Clinics
- Personnel Administration
- Human Problems of Adjustment in Industry

Environmental Hygiene
- Environmental Physiology
- Principles of Sanitation
- Industrial Air Analysis
- Hygienic Aspects of Ventilation

Public Health
- Ecology: Biological and Social
- Principles of Epidemiology
- Principles of Biostatistics
- Organization of Medical Care

In addition, the student may select from the general curriculum, courses of interest to him, or do special work subject to approval of the Head of the Department of Industrial Hygiene.

3. At the end of the academic year, a comprehensive examination will be given. This may be oral or written and will be designed to test the knowledge and judgment of the student and his ability to coordinate the basic industrial health subjects.

PROGRAM OF STUDY IN PUBLIC HEALTH EDUCATION

This program is offered by the School of Public Health with the cooperation of the Department of Social Relations (Faculty of Arts and Sciences) and the School of Education. The program as outlined is flexible and may be modified to suit the needs of the student. Classwork is supplemented by three months of supervised field work, which is required for students without experience in health education.

Candidates may study for the degree of Master of Public Health or Master of Science in Hygiene, depending upon the qualifications of the individual applicant. Work toward the degree of Doctor of Science in Hygiene is offered to exceptional students.

Health education is an area of public health in which there has been rapid development in recent years. Professional opportunities are numerous and varied and exist at local, state and national levels in both official and voluntary agencies.

The program of study includes the following courses:

Public Health and Health Education

(School of Public Health)

Required Courses:		*Credits*
Ecology: Biological and Social		3
Principles of Public Health Practice		3
Public Health Administration		6
General	(2)	
Health Education	(2)	
Public Health Nursing	(1)	
Social Work in Health Agencies	(1)	
Principles of Biostatistics		4
Principles of Epidemiology		2.5

Principles of Sanitation	4
Public Health Nutrition	1.5
Psychosocial Problems	1
Workshop in Health Education	3
School Health Education	2
Group Dynamics	2
TOTAL	32

Electives:

Courses in medical care; mental health; public health history; control of cancer, tuberculosis, venereal diseases, and others may be elected depending on individual interests and training.

Social Relations and Education

(Faculty of Arts and Sciences; School of Education)

A selection of courses from the following, which presuppose some knowledge of the social sciences and education, will vary with the student's background and needs.

Social Relations

Course	*Credits*
Cognitive Processes in Personality (Psych. 148)	5
Dynamic Psychology (S.R. 118)	5
Introduction to Anthropology (Anth. 1b)	5
Introduction to Group Dynamics (S.R. 148)	5
Opinion and Communication (S.R. 152)	5
Social Organization (S.R. 116)	5
Social Psychology (S.R. 117a)	5
Social Stratification (S.R. 139)	5
Sociology (S.R. 112 and 136)	5
Theories of Personality (S.R. 119)	5

Education

Course	*Credits*
Educational Administration (Ed.Ad. 1)	5
Educational Policy (Phil. of Ed. 1)	5
Educational Psychology (Ed. Psych. 1)	5
History of Educational Thought (Hist. of Learning 105)	5
Guidance (Guid. 1 or 16)	5

Field Work

Arrangements will be made with approved official and voluntary agencies for three months of supervised field work in health education.

Degrees in Engineering

Graduates of engineering colleges or scientific schools of recognized standing who are interested in the sanitary engineering or industrial hygiene aspects of public health may be admitted to the Division of Applied Science of the Graduate School of Arts and Sciences as candidates for the degree of Master of Science, Master of Engineering or Doctor of Philosophy. They may elect appropriate courses in the School of Public Health as a part of the program for these degrees.

For further information write to the Committee on Admissions, Graduate School of Arts and Sciences, Farlow House, Cambridge 38, Massachusetts.

CONTENT OF THE COURSES
OFFERED BY THE
FACULTY OF PUBLIC HEALTH

INTERDEPARTMENTAL COURSES

In addition to the instruction afforded in the various disciplines represented by the different departments of the School, it is believed to be important to bring the entire faculty and student body together at frequent intervals to consider broad subjects of basic importance to the entire group. With this in mind, the School has provided the following interdepartmental courses.

Public Health Forums. The Evolution, Scope, and Objectives of Public Health

Lectures and seminars. *Dates to be announced.* DEAN SIMMONS, members of the Faculty, and guest lecturers.

In order to afford an opportunity for the entire student body to meet with the Faculty and distinguished guest lecturers, forums are held at appropriate times during the academic year. The evolution, scope, and objectives of the profession of public health are the principal consideration of the forums.

The modern practice of public health requires coordinated teamwork and the integrated action of experts trained in a number of different, though related, scientific fields. Proper emphasis is given to training in these special disciplines in the courses offered by the various departments. However, it is impossible for every student to take all the courses, and certain individuals may have no contact with one or more departments. These general public health forums have the advantage of cutting across departmental lines. They give every student some contact with all sections of the School, and make it possible for him to learn something of the objectives and interests of each department and its relation to public health as a whole.

The main purposes of these lectures and seminars are to help orient the student, to assist him in visualizing the wide field covered by his chosen profession, and to stimulate constructive thinking and planning for his future activities.

Some of the sessions are devoted to a broad survey of the historic development, the present status, and the future objectives of public health; others present special applications of basic public health disciplines.

Public Health 1a. Ecology: Biological and Social

Lectures and seminars. *Mondays, Wednesdays and Fridays, 11–1, first period.* Dr. Reed, Dr. Paul and associates.

Credit 3 units.

The success of programs for community disease control depends upon working intelligently with the dynamic forces active in community life. This course of instruction deals with social and biological characteristics of human populations, the organization and behavior of human communities, and their relationship to the environment. Emphasis is placed upon those aspects of group life which are of particular importance for the health of the community. The objective of the course is to provide a knowledge of human populations and of interpersonal relationships in the community in preparation for the study of public health, in the same sense that anatomy, physiology and psychology contribute to the study of medicine. The course is presented in three parts.

Public Health 3c. History and Philosophy of Public Health

Seminars. *Saturdays, 10–12, third period.* Dr. Frechette.

Credit 1 unit.

The growth, development and philosophy of the modern health movement, particularly in the Anglo-Saxon countries is discussed. Cultural, social and economic forces that have influenced the movement are studied in relation to the evolution of health sciences and services.

DEPARTMENT OF BIOSTATISTICS

Hugo Muench, a.b., m.d., dr.p.h., a.m. (hon.), *Professor of Biostatistics* and *Head of the Department*

Jane Worcester, a.b., dr.p.h., *Associate Professor of Biostatistics*

Robert B. Reed, ph.d., *Associate Professor of Biostatistics and Human Ecology*

Margaret E. Drolette, a.b., *Assistant in Biostatistics*

Graduates of the School, whatever their chosen careers, will find themselves in positions where they must initiate programs and evaluate the results of the programs. Whether their work lies in administration or in research, students must be able to pose and to answer questions and to read critically the literature in their fields. Knowledge of the scientific method is essential to these purposes.

Since most students come to the School with no background in statistical technics and their application, the first course has been organized to present essential methodology, with the realization that few students will become workers primarily in the field of statistics. Relatively little emphasis is laid on technics per se, and these have been included only in the amount necessary for an appreciation of principles involved and methods used. The main stress is on the interpretation of quantitative data affected by a multiplicity of causes, the understanding of the meaning of the usual measures employed and the legitimate fields of use of these measures. In general, the first course is designed to help the student state his question clearly, determine the method which will answer the question and establish the limits within which the answer has validity.

Additional, elective courses provide opportunities for basic grounding in statistical methods and analytical procedures which are of value to the student who will be engaged in the fields of epidemiology, of laboratory research or of administration.

Biostatistics 1a, b. Principles of Biostatistics

Lectures, discussions, and laboratory. *Mondays and Fridays, 2–5, first and second periods.* Staff of the Department.

Credit 4 units.

Subjects presented include collection, tabulation, and elementary analysis of data; measures of center and of dispersion; and sampling from populations. The aim of the course is to prepare the student to draw justified conclusions from numerical data.

Biostatistics 2c, d. Statistical Analysis (Epidemiological)

Lectures, discussions, and laboratory. *Tuesdays and Thursdays, 9–12, third period; Tuesdays, 9–12, fourth period.* Staff of the Department.

Credit 3 units.

The epidemiologist is introduced to statistical methods which he will find of use in the attack on problems in his field. The subject matter includes the consideration of normal variability, the treatment of association of variables and the application of simple scientific hypotheses which can be treated mathematically. During the third period, the course runs concurrently with Biostatistics 3c, d.

Prerequisites: Biostatistics 1a, b; Epidemiology 1b; or their equivalents.

Biostatistics 3c, d. Statistical Analysis (Laboratory)

Lectures, discussions and laboratory. *Tuesdays and Thursdays, 9–12, third period; Thursdays, 9–12, fourth period.* Staff of the Department.

Credit 3 units.

This course is given concurrently with Biostatistics 2c, d during the third period, when material of interest to laboratory research workers as well as to epidemiologists is presented. During the latter part of the course, emphasis is on statistical technics useful in biological laboratories, including consideration of small sample theory, variance analysis, dosage response and the planning of experiments.

Prerequisites: Biostatistics 1a, b; Epidemiology 1b; acquaintance with laboratory methods in at least one field of the biological sciences.

Biostatistics 4c, d. Administrative Use of Statistics

Lectures and seminars. *Tuesdays, 2–4, third and fourth periods.* Staff of the Department and of other Departments.

Credit 2 units.

This is a joint course with the Department of Maternal and Child Health (see M.C.H. 4c,d) and Public Health Practice (see P.H.P. 12c,d). It is designed to provide the administrator with the statistical tools helpful in planning, operating, and appraising organized programs of health services.

The first part of the course considers the nature and limitations of existing data on population, natality, mortality and morbidity. It deals with the proper framing of questions, the availability of data which may answer them, and the methods by which additional information may be secured.

The second part is devoted to the use and value of "service statistics" in health service programs, such as maternal and child health services, special programs for specific diseases, and general programs of medical care for groups

of people. Actual data collected by administrative agencies are analyzed and appraised in regard to their general validity as well as their value in measuring accomplishments and defining problems.

The course is designed as an integrated whole, but the first or the second part may be taken separately.

Prerequisites: Biostatistics 1a,b; basic courses in administration.

Biostatistics 5c, d. Seminar in Biostatistics

Seminars. *One period of two hours weekly throughout the third and fourth periods.* Time to be arranged. Staff of the Department.

Credit 2 units.

This seminar is arranged primarily for the Department's staff. However, occasional students with special interest and sufficient preparation will be admitted.

Biostatistics 20. Biostatistical Research

Time and credit to be arranged according to amount of work done.

Reading and research in selected topics of biostatistics by students specializing in the field or those who desire supervision in working out statistical problems in their special fields of interest. Opportunity is given to take informal part in studies being carried on by members of the Department's staff, such as the statistical evaluation of measures of normal growth.

DEPARTMENT OF EPIDEMIOLOGY

JOHN E. GORDON, S.B., PH.D., M.D., A.M. (hon.), F.R.C.P. (Lond.), *Professor of Preventive Medicine and Epidemiology* and *Head of the Department*

THEODORE H. INGALLS, A.B., M.D., *Associate Professor of Epidemiology*

A. DANIEL RUBENSTEIN, A.B., M.D., M.P.H., *Assistant Professor of Epidemiology*

THOMAS F. PUGH, M.D., M.P.H., *Assistant Professor of Epidemiology*

JOHN J. POUTAS, A.B., M.D., *Visiting Lecturer on Epidemiology*

FRANCIS B. CARROLL, D.M.D., M.D., M.P.H., *Visiting Lecturer on Epidemiology*

CONRAD WESSELHOEFT, M.D., *Visiting Lecturer on Infectious Diseases*

JOHN C. AYRES, S.B., M.D., M.P.H., *Instructor in Epidemiology*

EDWARD J. O'ROURKE, A.B. M.D., M.P.H., *Instructor in Epidemiology*

NATESAIER PURSHOTTAM, M.B.,B.S., S.M., M.P.H., *Instructor in Epidemiology*

HUGH L. C. WILKERSON, S.B., M.D., M.P.H., *Research Associate in Epidemiology*

C. GEORGE TEDESCHI, M.D., *Research Associate in Pathology*

FRANK RANDOLF PHILBROOK, S.B., M.D., M.P.H., *Research Associate in Epidemiology*

CARL E. TAYLOR, S.B., M.D., DR.PH., *Research Associate in Epidemiology* (Absent 1953–54)

JOHN BENJAMIN WYON, B.A., M.B.,B.CH., M.R.C.P., *Research Associate in Epidemiology* (Absent 1953–54)

LOUIS WEINSTEIN, S.M., PH.D., M.D., *Lecturer on Infectious Diseases*

Epidemiology is viewed as medical ecology and the diagnostic discipline of mass disease. Multiple causation is considered a principle in the origin of mass disease; therefore epidemiology is a multiphasic discipline. It draws upon skills within public health and upon the medical and social sciences.

The epidemiologic method enters into all activities that relate to mass disease, as does diagnosis in clinical medicine. It permits programs to be formed and measures of prevention and control to be instituted, based first on established cause and secondly on the nature of the individual problem. It is an integral part of public health practice, whatever the field of interest, to such extent that epidemiological work in public health is done more by others than by the specialist. As a consequence, all workers in public health need to be familiar with the objectives and methods of epidemiology.

The initial required course, Epidemiology 1b, is limited to demonstration of principle and the applications to which those principles are turned.

Epidemiology 5c is an elective laboratory course on methods of field study of mass disease. Problems from acute and chronic infection provide the basic material for study. This course is for physicians, dentists and veterinarians desiring a second course in epidemiology and a presentation of practical means for solving health problems. Epidemiology 6d, a combined course given with the Department of Public Health Practice, is in logical sequence with Epidemiology 5c, being concerned with the organization of community resources to meet the requirements of specific problems defined epidemiologically.

Epidemiological interests in fields other than the communicable diseases have had increasing attention in recent years. Epidemiology 7d is a laboratory course based on problems of chronic non-infective disease and on mass injury. This course and Epidemiology 5c give experience in epidemiologic method and field procedure.

Course 2c is for students who wish to review current interests in the common communicable diseases of temperate climates. Course 3a,b,c,d is largely clinical and may be elected in one or all periods.

Course 8d is an advanced course primarily for students majoring in biostatistics, microbiology and epidemiology and Course 9d is for students from the military services and for majors in epidemiology and departments of allied interest.

Epidemiology 15 runs throughout the academic year and is designed to give practice through independent and individual effort in applying epidemiologic method to analysis of mass disease. The course is for students preparing for careers in epidemiology, in microbiology, in administrative public health practice, including tropical public health and maternal and child health. Places in the course, limited to ten, ordinarily are allotted these several interests.

Epidemiology 1b. Principles of Epidemiology

Lectures and seminars. *Mondays and Fridays, 11–1, Wednesdays, 11–12, second period.* Dr. Gordon and associates.

Credit 2.5 units.

This introductory course outlines the means by which disease of human populations is recognized and by which the multiple factors in causation are evaluated, those which determine origin and also those which govern course and extent. The main concern is therefore with ecologic analysis of mass disease, in terms of environment, host and agent of disease, and according to time and place. This required course is limited to principles, which have developed primarily from knowledge of the communicable diseases. Illustrative examples of the application of these principles to other fields such as nutrition, traumatic injuries, mental disorder, industrial hygiene and chronic degenerative and neoplastic diseases are presented through seminar discussion, to give

understanding of the present-day scope of epidemiology and the uses of the epidemiologic method.

Prerequisite: Biostatistics 1a,b.

Epidemiology 2c. Clinical Epidemiology

Lectures, demonstrations, clinics and conferences. *Mondays and Wednesdays, 12–1*; Clinics, *Fridays, 3.30–5, third period.* Dr. Ingalls, Dr. Weinstein.

Credit 1.5 units.

The common, acute communicable diseases of temperate climates are presented. Methods of diagnosis, treatment and control are given and the movement of disease in small social groups is studied through analysis of recorded outbreaks within the structure of families, schools, camps, apartment houses, offices, and hospitals.

The course is for physicians who wish to review common communicable diseases with special reference to the problems of the health officer. Epidemiologists, veterinarians, dentists and students of other public health disciplines with demonstrated need for the course are admitted.

Epidemiology 3a, 3b, 3c, 3d. Clinical Infectious Diseases

Clinics. *Saturdays, 9–11, first, second, third, or fourth periods.* Dr. Weinstein and associates.

Credit .5 unit in each period.

Clinical conferences on the care and management of patients with acute infectious diseases are held weekly by the staff of the Haynes Memorial Hospital. Topics are selected according to available clinical material. Students may attend in one or more periods.

Epidemiology 5c. Practice of Epidemiology

Laboratory exercises, conferences, seminars. *Mondays, Wednesdays, and Fridays, 9–12, third period.* Dr. Rubenstein, Dr. Pugh, Dr. Purshottam.

Credit 3 units.

A laboratory course devoted to the epidemiology of acute communicable diseases. The aim is to provide experience in epidemiologic method through solving problems drawn mainly from current practice. Collection of field data and the analysis and interpretation of results are related to epidemic and endemic situations. Modes of infection are defined and the laws of epidemics examined. Principal sources of infection are studied. The epidemiologic behavior of individual diseases, so chosen as to represent major means of transmission are presented in systematic fashion. Correlation of clinical, field and laboratory procedures is emphasized in the development and evaluation of

programs for prevention of infectious disease and the management of epidemics.

Prerequisite: Epidemiology 1b.

Epidemiology 6d. Control of Comunicable Disease

Seminars, *Fridays, 9–11, fourth period.* Dr. Feemster and Dr. Pugh.

Credit 1 unit.

This course is given jointly with the Department of Public Health Practice. (See Public Health Practice 16d.) Specific problems, partly drawn from Epidemiology 5c, are studied from the administrative standpoint. Attention is centered on elements of control programs according to personnel and facilities available in the given situation. The emphasis is on operational procedure in diagnosis and management of mass disease.

Prerequisite: Epidemiology 5c.

Epidemiology 7d. Non-Infective Mass Disease and Injury

Laboratory exercises, conferences and seminars. *Mondays and Wednesdays, 9–12, fourth period.* Dr. Ingalls and Dr. Philbrook.

Credit 2 units.

A laboratory course concerned with the origin and behavior of non-infective mass disease and injury. The main emphasis is on chronic conditions of degenerative, metabolic and neoplastic nature, and the factors that determine endemic distributions. Congenital anomalies and other disorders of growth and development are a second division. Traumatic mass injury, primarily accidents, and chemical intoxications represent acute conditions. Situations that give aggregation of cases and distributions of epidemic proportions are a further interest. Selected problems illustrate modifications in epidemiological method and procedure applicable to these diseases. Special consideration is given to surveys of incidence and prevalence, to case finding, sources of existing information, and to field methods of acquiring desired data through retrospective and prospective studies.

Prerequisite: Epidemiology 1b.

Epidemiology 8d. Quantitative Method in Epidemiology

Lectures and seminars. *Saturdays, 9–11, fourth period.* Dr. Ipsen.

Credit 1 unit.

This course is designed for students with sound preparation in biology and biostatistics. The principal concern is with theoretical epidemiology and causality of mass disease. Quantitative methods are applied to analysis of the movements of disease in population groups with special consideration of the forces that act to produce epidemics.

Epidemiology 9d. Military Preventive Medicine

Seminars. *Fridays, 11–1, fourth period.* Dr. Gordon.

Credit 1 unit.

A series of seminars, conferences, and demonstrations concerned with administrative and professional problems in military preventive medicine. Designed primarily for students from the military services.

Admission by permission of the instructor.

Epidemiology 15a, b, c, d. Advanced Epidemiology

Seminars. *Wednesdays, 2–4, first period; 2:30–4:30, second period; Fridays, 2–4, third period; Mondays 2–4, fourth period; other time to be arranged.* Dr. Gordon.

Credit 1 to 3 units in each period.

An informal tutorial course designed to further a command of the epidemiologic method through individual training and practical experience. Each student is assigned a problem or develops a previous interest through field study, laboratory experiment, or library investigation. Seminars are devoted to discussion of these problems. Admission is by permission of the instructor and credit is in proportion to the amount of time devoted to the work. No more than ten students will be accepted.

Epidemiology 20. Research in Epidemiology

Time to be arranged; admission subject to approval of the instructor. Work may be elected with any departmental staff member.

Qualified students are offered the opportunity to undertake special studies in the acute communicable diseases, or in community problems of noncommunicable processes or injuries. Problems may be assigned or aid is provided in developing individual interests.

Epidemiology 30c. Operational Epidemiology

Field visits February 1–6, inclusive. Dr. Pugh.

Credit 1 unit.

A week of planned visits in the New York area, limited to field and research activities in epidemiology, and including the Bureau of Preventable Diseases, City of New York Department of Health, New York Port Authority, Lederle Laboratories, United Nations World Health Organization, Milbank Memorial Fund and the American Public Health Association.

DEPARTMENT OF INDUSTRIAL HYGIENE

PHILIP DRINKER, S.B., CHEM.E., S.D. (hon.), LL.D., A.M. (hon.), *Professor of Industrial Hygiene* and *Head of the Department*

CONSTANTIN P. YAGLOU, B.A., S.B., M.M.E., A.M. (hon.), *Professor of Industrial Hygiene*

LESLIE SILVERMAN, S.D., *Associate Professor of Industrial Hygiene Engineering*

ROSS A. MCFARLAND, A.B., PH.D., S.D. (hon.), *Associate Professor of Industrial Hygiene*

CHARLES R. WILLIAMS, PH.D., *Assistant Professor of Industrial Hygiene*

ROBERT B. O'CONNOR, A.B., M.D., *Assistant Professor of Industrial Medicine*

ROBERT C. PAGE, A.B., M.D., *Visiting Lecturer on Industrial Hygiene*

JAMES H. STERNER, S.B., M.D., *Visiting Lecturer on Industrial Hygiene*

MELVIN N. NEWQUIST, A.B., S.B., M.D., *Visiting Lecturer on Industrial Hygiene*

EMMA S. TOUSANT, LL.B., *Instructor in Industrial Hygiene*

MARY O. AMDUR, S.B., PH.D., *Research Associate in Industrial Hygiene*

RICHARD DENNIS, S.M., *Research Associate in Industrial Hygiene*

CHARLES E. BILLINGS, S.M., *Research Associate in Industrial Hygiene*

AUGUST T. ROSSANO, JR., S.M., *Research Fellow in Industrial Hygiene*

RICHARD D. COLEMAN, S.M., *Research Fellow in Industrial Hygiene*

PHILIP LATORRE, S.B., *Research Fellow in Industrial Hygiene*

DAVID M. ANDERSON, S.B., *Research Fellow in Industrial Hygiene*

ROBERT M. THOMSON, *Assistant in Industrial Hygiene*

B. A. LINDBERG, M.E., *Associate Professor of Business Administration*

C. GUY LANE, A.B., M.D., *Clinical Professor of Dermatology, Emeritus*

HARRIET L. HARDY, A.B., M.D., *Clinical Associate in Preventive Medicine*

ALBERT O. SEELER, A.B., M.D., *Instructor in Medicine*

Industrial Hygiene 1c. Basic Problems in Industrial Hygiene

Lectures and demonstrations. *Mondays and Fridays, 2–4, Wednesdays, 1:30–5, third period.* Professor DRINKER, Dr. SEELER, and associates.

Credit 3 units.

A course of lectures, demonstrations, and inspections showing the relation of working conditions to health, with special reference to elimination of industrial hazards and prevention and treatment of industrial disabilities and diseases.

Industrial Hygiene 2a, b and 2c, d. Industrial Air Analysis

Laboratory work. *Tuesdays and Thursdays, 2–5, all four periods.* Dr. SILVERMAN and Dr. WILLIAMS.

Credit 4 units in each term.

Determination and interpretation of adverse conditions found in work places of all types, such as factories and mills, and in assembly halls; methods employed in determining physical properties of the air, such as temperature, humidity, and air motion; atmospheric impurities and normal constituents of the air — gases, dusts, bacteria, and pollens; efficiencies of protective devices — masks, respirators, mechanical dust-collecting apparatus, hoods, and exhausters; efficiencies of air-conditioning equipment.

Course 2a, b (Eng. 281a) is intended for public health engineers and physicians enrolled in the Industrial Health program. Course 2c, d (Eng. 281b) is a continuation, primarily for students in industrial hygiene.

Industrial Hygiene 3c, d. Industrial Medical Clinics

Time and credit to be arranged. Dr. O'CONNOR, Dr. SEELER, Dr. HARDY, and associates.

Students participate in appropriate clinics at teaching hospitals and in medical clinics of various industries.

Industrial Hygiene 4c. Personnel Administration

Lectures. *Mondays and Wednesdays, 8:30–10, third period.* Associate Professor LINDBERG.

Credit 1.5 units.

The objectives of this course are to explore various types of industrial and business organizations, to develop an appreciation of the various relations between departmental functions, and to trace the effects of these relations upon the individual worker, the supervisor, the organization itself, and society.

The functions of a medical department as well as its interrelations with other line and staff departments are considered. Special consideration is given to problems in the administration of a medical department where collective bargaining relations exist. These functions, activities, and problems are studied through a series of cases covering employee health, employee safety, rehabilitation, and retirement programs.

Industrial Hygiene 5c. Human Problems of Adjustment in Industry

Lectures and demonstrations. *Mondays, 12–1, and Fridays, 9–10, third period.* Dr. MCFARLAND.

Credit 1 unit.

The primary objective of this course is to apply the technics of the various biological sciences to the problems of adjusting workers to their jobs. The initial emphasis is on the selection and placement of workers and the design of equipment to meet human requirements. A study of job requirements is then made to determine the psychologic and physical demands placed upon the worker in achieving successful job placement. With this background, principles are derived for the control of accidents, operational fatigue, and other basic factors influencing efficiency and health. Attention is also given to the problems of gerontology and of workers with physical handicaps. The course is concluded with emphasis on mental and emotional adjustment of workers and factors influencing effective group functioning.

Industrial Hygiene 6c. Industrial Medicine

Lectures and seminars. *Mondays, Wednesdays and Fridays, 10–12, third period.* Dr. O'Connor and associates.

Credit 3 units.

This course is devoted to medical problems of importance to the industrial physician. The following are among the subjects that are considered: functions of the industrial physician; functions of the industrial nurse; organization of industrial medical departments; medical aspects of workmen's compensation; preplacement examinations; geriatric problems in industry and rehabilitation; relation of trauma to disease.

Industrial Hygiene 7d. Industrial Hygiene Engineering

Lectures and problems. *Mondays, Wednesdays, and Fridays, 2–4, fourth period.* Professor Drinker and Dr. Silverman.

Credit 3 units.

Control of industrial conditions by engineering methods; field trips, reports, design and operation of equipment. For engineers. (Industrial Hygiene 1c and 7d are classified as Eng. 282.)

Industrial Hygiene 8d. Hygienic Aspects of Ventilation

Lectures. *Tuesdays and Thursdays, 8:30–10, fourth period.* Professor Yaglou.

Credit 1.5 units.

Selected topics in ventilation of interest to students in sanitary engineering and in public health.

Engineering 280. Heating and Air Conditioning

Lectures. *Mondays, Wednesdays, and Fridays, 8–9, fall term, at Pierce Hall, Cambridge.* Professor Yaglou.

The theory and practice of heating and air conditioning. For engineers.

Industrial Hygiene 20. Research

A limited number of qualified students will be given an opportunity to do research work in problems of industrial health including occupational disease, toxicology, air cleaning, heating, ventilating, and air conditioning, by arrangement with the head of the Department.

Industrial Hygiene 40d. Human Factors in Industrial Safety

Lectures. Time and credit to be arranged. Dr. McFarland.

Emphasis is placed on the role of human factors in industrial safety. The significance of the problem is ascertained first by an analysis of accident statistics and records in various industries. The different methods of controlling accidents is then considered with equal emphasis on: (a) the selection and training of workers, including the detection of accident repeaters, (b) the design of equipment and working areas, including work practices, and (c) environmental influences, including noise, illumination, temperature and humidity. The influence of temporary attributes of the individual on accident causation, such as fatigue, loss of sleep, alcohol and drugs is studied as well as the role of age, emotion and morals.

DEPARTMENT OF MATERNAL AND CHILD HEALTH

Harold C. Stuart, litt.b., m.d., a.m. (hon.), *Professor of Maternal and Child Health* and *Head of the Department*

William M. Schmidt, s.b., m.d., *Associate Professor of Maternal and Child Health Practice* *

Bertha S. Burke, a.m., *Associate Professor of Maternal and Child Nutrition*

Samuel B. Kirkwood, a.b., m.d., *Clinical Professor of Maternal Health* and *Commissioner of Public Health, Department of Public Health of Massachusetts*

Elizabeth P. Rice, a.b., s.m., *Associate Professor of Public Health Social Work*

Samuel W. Dooley, s.b., m.d., *Assistant Professor of Child Health*

Leona Baumgartner, ph.d., m.d., s.d. (hon.), *Visiting Lecturer on Maternal and Child Health*

Edwin F. Daily, m.d., *Visiting Lecturer on Maternal and Child Health*

Robert G. Rice, b.a., b.sc., m.d., c.m., m.p.h., *Instructor in Maternal and Child Health* and *Director of Division of Maternal and Child Health, Department of Public Health of Massachusetts*

* Resigned, effective September 1, 1953.

R. Rita Fitzgerald, A.B., S.M., *Instructor in Maternal and Child Nutrition*

George Kahn, S.B., M.D., M.P.H., *Instructor in Child Health* and *Medical Inspector, City of Boston Health Department*

Ruth Butler, A.B., S.M., *Research Associate in Medical Social Work*

Isabelle Valadian, M.D., M.P.H., *Research Associate in Child Health*

Marjorie Parsons, S.B., *Assistant in Public Health Nursing*

Florence E. Cyr, A.B., S.M., *Assistant in Social Work*

Elizabeth O. Grant, S.B., *Assistant in Maternal and Child Health*

Anna S. van den Berg, B.Sc., S.M. in Hyg., *Assistant in Maternal and Child Nutrition*

Charles A. Janeway, A.B., M.D., *Thomas Morgan Rotch Professor of Pediatrics*

David D. Rutstein, S.B., M.D., *Professor of Preventive Medicine*

William T. Green, A.M., M.D., *Clinical Professor of Orthopedic Surgery*

Clement A. Smith, M.D., *Associate Professor of Pediatrics at the Boston Lying-in Hospital*

J. Roswell Gallagher, A.B., M.D., *Assistant Professor of Clinical Pediatrics*

Stewart H. Clifford, M.D., *Clinical Associate in Pediatrics*

Lendon Snedeker, A.B., M.D., M.P.H., *Instructor in Pediatrics*

Robert M. Ravven, A.M., M.D., *Instructor in Psychiatry*

Dane G. Prugh, A.B., M.D., *Instructor in Pediatrics*

Ralph A. Rōss, A.B., M.D., *Clinical Associate in Pediatrics*

Leslie Corsa, Jr., S.B., M.D., *Instructor in Pediatrics at the Massachusetts General Hospital*

The public health problems and activities which concern a division of maternal and child health have to do with many fields of science. Some of these relate to the health and welfare of all age groups, but are of particular importance to the infant or the child. Others are problems of early life only, or require special services for these age groups. Still others relate only to the health of women during the childbearing period. Since this range of subjects is very broad, the Department gives little attention to those problems pertaining to health which are more fully considered by other departments of the School. On the other hand, the special problems peculiar to maternity and childhood are considered, even though they may relate to the general fields of other departments. Thus the special aspects of diet during pregnancy and lactation, infant feeding, and diet at succeeding periods of childhood are em-

phasized. Communicable diseases commonly occurring in childhood are not studied in all aspects, but immunization procedures and environmental control measures particularly applicable in early life are discussed. Administrative procedures for the conduct of special maternal and child health services are given consideration, in close collaboration with the Department of Public Health Practice.

A weekly seminar is held during the second period for discussion of subjects presented in P.H.P. 1b which relate particularly to maternal and child health services. This seminar course is open to all students who are not specializing in this field but who desire to obtain a broader understanding of the content and special features of maternal and child health service.

A program of seminars, covering the special problems of maternal and child health, is conducted throughout the academic year; designed primarily for and required of students majoring in this Department. During the first two periods, the problems of maternity, infancy, childhood, and adolescence are dealt with; during the third period, attention is devoted to the regular health services organized to meet these problems and the administrative aspects of these services and in the fourth period, to special programs for selected groups of handicapped children. In addition, students majoring in maternal and child health are required to do individual work, during the third and fourth periods as described under Maternal and Child Health 20 and to take one field trip as described under Maternal and Child Health 30.

The Department offers advanced seminar courses as electives for those who are interested and qualified. In the third period, a course is given in maternal and child nutrition and in the fourth period courses are given in physical growth and development, social problems and recent advances in obstetrical care. A course is also given jointly with the Department of Biostatistics during the third and fourth periods, dealing with the statistical analysis of problems in maternal and child health.

In addition to the courses required of all students enrolled for the Master of Public Health degree, students majoring in maternal and child health are expected to take as many of the following courses as their schedule permits, approval of their selections by the head of the Department concerned being required: Public Health Nutrition (first period) and Basic Nutrition (second and third periods) in the Department of Nutrition; Organization of Medical Care (second period), and the general course in Public Health Practice (P.H.P. 10c, d, third and fourth periods) which includes study of the fields of public health administration, health education, public health nursing and social work in health programs.

Clinical demonstrations and field visits will be arranged in the regular courses from time to time in connection with discussions of clinical problems and services, especially in time set aside for individual work in the third

and fourth periods. These may be at the Boston Lying-in Hospital, the Children's Medical Center, or in public or private health agencies in the vicinity. It should be understood, however, that clinical training in obstetrics and pediatrics cannot be provided as part of the curriculum offered by this Department.

All the courses in maternal and child health are organized on a panel or seminar basis, with introductory lectures as required for presentation of material not readily available in the literature. Active student participation in discussions is encouraged and assignments are made of subjects for individual presentation.

GENERAL COURSE

(Elective for all students not majoring in the Department)

Maternal and Child Health 2b. Problems and Services

Round Table discussions. *Wednesdays 12:30–2:30, second period.* Dr. STUART, Dr. KIRKWOOD, Mrs. BURKE, Miss RICE, Dr. DOOLEY and Miss VARLEY.

Credit 1 unit.

This series of discussions is closely integrated with Public Health Practice 1b and is designed to supplement it. The major special health problems of mother, fetus, infant and child and the organization and administration of special programs to deal with them will be considered following their more formal presentation in P.H.P. 1b. These problems are discussed by representatives of the principal disciplines which participate in rendering these services.

BASIC COURSES

(Required of students majoring in the Department)

Maternal and Child Health 1a, b. Basic Problems

Lectures and seminars. *Tuesdays and Thursdays, 11–1, first period; 2–4, second period.* Dr. STUART, Dr. KIRKWOOD, Mrs. BURKE, Miss RICE, Dr. DOOLEY and Dr. REED.

Credit 4 units.

This course deals first with special problems of maternity in relation to the periods of pregnancy, labor, delivery, and the puerperium, from the standpoints of maternal, fetal, and early infant health. The course then deals with the well child and his nutritional and other requirements for normal growth and health. It considers the social, psychologic, educational and other factors

in family and community life which have an important bearing on the mother and the child. It deals further with the relative importance of different causes of death and illness by age and locality and with the progress thus far made in preventing these occurrences. The purpose here is to provide a better understanding of the extent and nature of the leading problems of maternal and child health. Familiarity with these subjects is essential for work in the field of maternal and child health and is important for those who propose to take the other special courses given by the Department.

Maternal and Child Health 3c, d. Services, Programs, and Administration

Lectures and seminars. *Mondays, Wednesdays, and Fridays, 9–11, third period, Mondays and Wednesdays, 9–11, fourth period.* Dr. STUART, Dr. STERNFELD, Mrs. BURKE, Miss RICE, Miss VARLEY, associates and guest lecturers.

Credit 5 units.

This course is designed to provide thorough understanding of the methods of organizing and supervising programs and services to deal with the special problems of maternal and child health at various levels of government and in different types of communities. Administration of programs will be discussed and demonstrations of services afforded whenever circumstances permit. Administrators from the field will participate in the course from time to time as guest lecturers or in panel discussions. In so far as possible the services will be grouped under the headings of Maternal and Newborn Services, Infant and Pre-school Child Health Services and School Health Services during the third period and Programs for Crippled or Handicapped Children during the fourth period. Each will also be considered in relation to federal, state, and municipal programs, and services in rural areas. Students majoring in Maternal and Child Health will be given opportunities to visit clinics and other services concurrently with these seminars in time set aside for Maternal and Child Health on Thursdays during the third and fourth periods.

ADVANCED ELECTIVE COURSES

(For students majoring in the Department or in a field related to the subject of the course)

Maternal and Child Health 4c, d. Administrative Use of Statistics

Lectures and seminars. *Tuesdays, 2–4, third and fourth periods.* Staffs of the Departments participating.

Credit 2 units.

This is a joint course with the Departments of Biostatistics and of Public Health Practice. See Biostatistics 4c, d for description.

Maternal and Child Health 5c. Maternal and Child Nutrition

Seminars. *Mondays, 11–1, third period.* Mrs. BURKE and associates.

Credit 1 unit.

This course is designed primarily for advanced training of students majoring in public health nutrition or in maternal and child health. It deals with the nutritional requirements of pregnancy and lactation, of infancy, and of the preschool and school child and the adolescent. The practical problems involved in fulfilling these needs are discussed from the physiologic, psychologic and socio-economic aspects. Nutrition services in a well-rounded public health program for maternal and child health are discussed.

Maternal and Child Health 6d. Social Problems and Available Social Services for Children

Seminars. *Tuesdays, 9–11, fourth period.* Miss RICE and associates.

Credit 1 unit.

This course will cover the historical development of child welfare services, discussions of such problems as foster home and institutional care of children, adoption, illegitimacy, medical neglect, child delinquency, social legislation and organization of community services for children.

Maternal and Child Health 7d. Physical Growth and Development

Seminars. *Fridays, 9–11, fourth period.* Dr. STUART and associates.

Credit 1 unit.

This course will explore more fully than Maternal and Child Health 1a, b the aspects of physical growth and development from the fetal through the adolescent periods which are significant in relation to problems of child health and preventive pediatrics. The use and interpretation of physical measurements, roentgenograms and various norms and charts in current use as aids in the assessment of physical status and growth progress will be considered. So also, the clinical evaluation of the child's progress from pediatric, orthopedic and dental points of view and the evaluation of health histories to determine possible causes of poor status or progress will be discussed. Longitudinal data from individual children followed periodically during the developmental period will be studied as clinical examples.

Maternal and Child Health 8d. Recent Advances in Obstetrical Care

Seminars. *Tuesdays, 4–5, clinic time to be arranged, fourth period.* Dr. KIRKWOOD.

Credit 1 unit.

This course consists of informal discussions, demonstrations and ward

rounds. It is designed for the student who may have been out of recent contact with clinical obstetrics and gynecology and stresses the important advances in the medical care of the mother, particularly as they relate to the administration of maternal and child health programs.

Maternal and Child Health 20. Special Assignments for Individual Work

This work is designed specifically for students majoring in maternal and child health or a closely related field. It affords these students an opportunity to do individual work for credit under instructor guidance on problems relating to this special field. Each program will be arranged in conference between student and instructor and must be accepted in advance by the head of the Department. In general, such programs will include review of the literature on the subject selected, field observations including some original work, and a paper reporting the work done. Students majoring in maternal and child health are required to have 2 units of credit in this course in each of the third and fourth periods.

Maternal and Child Health 30c and 30d

Field trips for observation of maternal and child health services. Three to five days each during periods in January and April. Dr. SCHMIDT, Miss VARLEY and associates.

Credit 1 unit for each five-day trip.

Students taking these field exercises have opportunities to see programs in operation under Departments of Maternal and Child Health and to participate in discussions with members of these departments regarding practical problems of service and administration. At least one five-day period is required of those majoring in the Department.

During the third and fourth periods, group field visits, special clinics and individual field assignments are also made on Thursdays for which credit up to one unit per period will be given.

DEPARTMENT OF MICROBIOLOGY

JOHN C. SNYDER, A.B., M.D., *Professor of Microbiology* and *Head of the Department*

EDWARD S. MURRAY, A.B., M.D., M.P.H., *Associate Professor of Microbiology* and *Assistant Medical Adviser to the Department of Hygiene*

ROBERT S. CHANG, S.B., M.D., S.D. IN HYG., *Associate in Microbiology*

GEOFFREY EDSALL, M.D., *Visiting Lecturer on Microbiology*

HERALD R. COX, A.B., S.D., S.D. (hon.), *Visiting Lecturer on Microbiology*

HENRY S. FULLER, S.B., M.D., M.P.H., *Visiting Lecturer on Microbiology*

ADELE KARP, B.SC., PH.D., *Research Associate in Microbiology*

HIDEO KUSAMA, M.D., *Milton Research Associate in Microbiology*

JAMES A. MCCOMB, D.V.M., *Instructor in Public Health Immunology*

JOHN M. NEWELL, A.B., S.D., *Instructor in Public Health Immunology*

SAMUEL D. BELL, JR., A.B., M.D., M.P.H., *Research Fellow in Microbiology*

JUDITH C. MILLER, S.B., *Assistant in Microbiology* (Leave of absence from September 1, 1953)

J. HOWARD MUELLER, S.M., PH.D., A.M. (hon.), *Charles Wilder Professor of Bacteriology and Immunology*

JOHN F. ENDERS, A.B., A.M., PH.D., *Associate Professor of Bacteriology and Immunology*

MONROE D. EATON, A.M., M.D., *Associate Professor of Bacteriology and Immunology*

ALBERT H. COONS, A.B., M.D., *Silas Arnold Houghton Assistant Professor of Bacteriology and Immunology*

ROBERT A. MACCREADY, S.B., M.D., *Associate in Bacteriology and Immunology* and *Assistant Director of the Division of Communicable Diseases, Department of Public Health of Massachusetts*

The students in the School of Public Health may be considered in three categories as regards their previous training in microbiology.

(*a*) *Students who have had satisfactory previous instruction but who have not had extensive experience in the field.* Most of the candidates for the degree of Master of Public Health belong in this group. The regularly scheduled courses in microbiology in the School of Public Health are designed primarily for these students.

(b) *Students whose background in microbiology is negligible.* In this group are those students whose previous instruction was received many years before their matriculation in the School of Public Health, and whose activities have not brought them into contact with the developments in bacteriology. Also in this group are the students whose previous instruction was incomplete or unsatisfactory for various reasons. This group is advised to take a basic course in bacteriology and immunology such as Bacteriology 201, Harvard Medical School, or Sanitary Engineering 2a, b (Sanitary Bacteriology) given by the Department of Sanitary Engineering, or a similar course elsewhere.

Candidates for the degree of Master of Public Health who fall in this category are required to complete a basic course in medical or sanitary bacteriology before they may receive their degrees.

(c) *Students who have had extensive experience and who are familiar with the principles and standard methods.* The regularly scheduled courses in the School of Public Health are not designed for this group. However, several opportunities for advanced training are available. By arrangement with the Massachusetts Department of Public Health, students may study in the Institute of Laboratories, which includes the Biologic Laboratories, the Wassermann Laboratory, and the Diagnostic Laboratory. Courses in various aspects of sanitary bacteriology are given by the Department of Sanitary Engineering. Suitably qualified students may wish to take courses in the Harvard Medical School, such as Bacteriology 201, 202 and 203. These courses are described in detail in the official register of the Division of Medical Sciences of the Graduate School of Arts and Sciences.

Microbiology 1a, b. Principles of Bacteriology and Immunology

Lectures and demonstrations. *Wednesdays and Fridays, 9–10, first period; Tuesdays and Thursdays, 9–10, second period.* Dr. Snyder, Dr. Murray and Dr. Chang.

Credit 2 units.

This course considers the bacteria, viruses, rickettsiae, and fungi which are pathogenic for man. The principles of bacteriology and immunology are discussed in relation to the problems of public health with emphasis on recent developments. The course is designed particularly for students who will be concerned with communicable diseases.

Prerequisite: Medical Bacteriology.

Microbiology 2a, b, c, d. Current Research in Microbiology

Department Staff. *Eight meetings a year, time to be arranged.*

Credit .5 unit.

This course is arranged for the students who are concentrating in microbiology. Important papers from current periodicals on topics of general interest are assigned to the students for presentation. These papers are considered critically in respect to evaluation of the experimental work, analysis of the results, organization of the manuscripts, and clarity of presentation.

The purpose of the course is to develop the ability of the students to read the literature analytically and to plan their own work and manuscripts effectively.

Prerequisite: Concurrent enrollment in Microbiology 1a,b or equivalent previous instruction.

Microbiology 11b. Public Health Laboratory Procedures

Lectures, seminars, and laboratory exercises. *Tuesdays and Thursdays, 2–5, Wednesdays, 12–1, and two hours per week individual laboratory work, second period.* Dr. Murray and Dr. Chang.

Credit 3 units.

This course considers briefly the standard laboratory technics and includes recent methods for study of representative rickettsiae and viruses. It is designed for students who are likely to be involved in various relations with public health laboratories. However, it does not offer the detailed technical training of the sort needed by persons who will be engaged primarily in laboratory work.

Technics used in serology and bacteriology are demonstrated and short exercises illustrate the important principles of the tests. In the portion of the course devoted to rickettsiae and viruses the students themselves inoculate embryonated eggs and animals by various routes, and perform neutralization tests and red cell agglutination tests.

Limited to fourteen students who have completed Microbiology 1a.

Microbiology 12a, 12c, d. Biological Products in Public Health

Seminars and laboratory demonstrations at the Institute of Laboratories of the Massachusetts Department of Public Health. *Mondays 9–10:30 first period; Fridays 8:30–10, third period; hours to be arranged, fourth period, and individual laboratory work.* Dr. Ipsen.

Credit 1 unit first period; 2 units third and fourth periods.

In the first period, technics for production of biological products used in public health are demonstrated. Seminar discussions deal with the practical importance of biologics in control of communicable disease and their appropriate uses.

The third and fourth periods are devoted to principles and practices in the design of experiments in microbiology in relation to official potency tests, to

other laboratory experiments, and to field assays of biologics in human populations.

Enrollment for 12a or 12c, d, separately is acceptable.

Opportunities are offered properly qualified students for original work at the Institute in problems of Public Health Immunology with credit for Course Microbiology 20 to be arranged with the Head of the Department.

Microbiology 13c. Rickettsial Diseases

Lectures and laboratory exercises. *Mondays and Wednesdays, 2–5, and four hours per week individual laboratory work, third period.* Dr. SNYDER, Dr. MURRAY and Dr. CHANG.

Credit 3 units.

This course considers the rickettsiae of epidemic and murine typhus, Rocky Mountain spotted fever, tsutsugamushi disease, and Q fever. The following subjects are studied in detail: properties of rickettsiae; their isolation and identification in the laboratory; vectors and reservoirs; prevention, control, and treatment of human rickettsial infections. Students perform a few of the standard procedures for isolation of rickettsiae and for diagnosis of these infections by various serologic tests. The course is a basic preparation for research on rickettsiae either in the laboratory or in the field.

Limited to ten students who have had a satisfactory background in the laboratory aspects of bacteriology.

Prerequisite: Microbiology 1a, b and 11b, or the equivalent.

Microbiology 14d. Arthropods in Relation to Human Disease

Lectures and laboratory exercises. *Fridays, 9–11; Wednesdays and Fridays, 2–5, fourth period.*

Credit 3 units.

This is a joint course with the Department of Tropical Public Health (see Tropical Public Health 3d). Its objective is to provide the student with a satisfactory background in the field of arthropod-borne diseases.

Enrollment subject to the approval of the instructor.

Microbiology 15c, d. Problems in Serology

Laboratory exercises. *Third and fourth periods, time and credit to be arranged.* Dr. MURRAY and Dr. CHANG.

Laboratory exercises on certain phases of current serologic technics are offered to students who have had adequate previous laboratory experience.

Prerequisite: Microbiology 11b.

Microbiology 20. Research

Properly qualified students may do research in the laboratories of the Department. Time and credit to be arranged with the head of the Department.

DEPARTMENT OF NUTRITION

Fredrick J. Stare, s.m., ph.d., m.d., a.m. (hon.), *Professor of Nutrition* and *Head of the Department*

David M. Hegsted, s.m., ph.d., *Associate Professor of Nutrition*

Robert P. Geyer, s.m., ph.d., *Assistant Professor of Nutrition*

George V. Mann, a.b., s.d., m.d., *Assistant Professor of Nutrition*

Jean Mayer, b.a., ph.d., d.sc., *Assistant Professor of Nutrition*

Martha F. Trulson, s.b., m.p.h., s.d. in hyg., *Assistant Professor of Nutrition*

F. Eugenia Whitehead, s.b., s.m., s.d. in hyg., *Visiting Lecturer on Nutrition Education*

Rena R. Hasker, s.b., a.m., *Instructor in Nutrition*

Elizabeth K. Caso, s.m., *Instructor in Nutrition*

Madge L. Myers, a.b., s.m., *Instructor in Nutrition*

Joseph J. Vitale, s.d. in hyg., *Research Associate in Nutrition*

Hilda S. White, s.b., ph.d., *Research Associate in Nutrition* (Absent 1953–54)

Philip L. White, s.m., s.d. in hyg., *Research Associate in Nutrition* (Absent 1953–54)

Stanley N. Gershoff, a.b., s.m., ph.d., *Research Associate in Nutrition*

Stephen B. Andrus, s.b., m.d., *Research Associate in Pathology* (From October 1, 1953)

Helen S. Lockhart, s.b., ed.m., *Assistant in Nutrition*

Julia A. Shea, a.b., s.m., *Assistant in Nutrition*

Louis C. Fillios, a.b., s.m. in hyg., *Assistant in Nutrition*

A. Baird Hastings, s.b., ph.d., s.d., *Hamilton Kuhn Professor of Biological Chemistry*

James H. Shaw, s.b., s.m., ph.d., *Assistant Professor of Dental Medicine*

William R. Waddell, s.b., m.d., *Instructor in Surgery*

Norman Zamcheck, m.d., *Instructor in Medicine*

Nutrition 1a. Public Health Nutrition

Lectures. *Tuesdays, Thursdays, and Saturdays, 9–10, first period.* Dr. STARE and associates.

Credit 1.5 units.

This course deals with the practical application of the science of nutrition to the problems of human nutrition, especially in the field of public health. Dietary requirements are considered in their relation to growth, development, disease, pregnancy, lactation, and the formation and maintenance of dental structures. Methods for establishing the minimum and optimum nutritional requirements, together with the problems of meeting these requirements, especially for low income groups, are discussed. The purposes and value of nutrition surveys are discussed along with methods of procedure and evaluation of measurements obtained. The place of the nutritionist in the public health program is considered and various fields of a well-rounded nutrition service are discussed as it correlates with the activities of health, welfare, educational, and industrial organizations. The effect of various environmental, social, economic, and psychologic factors upon food habits is also studied as these factors influence the nutritional status of an individual or group of people. The consequences of nutritional deficiencies and the relation of optimum nutrition to national and international health and economy are discussed. The nutritional problems of relief, rehabilitation, famine, and other emergencies are dealt with. The relation of production, distribution, and preparation for the best use of foods is discussed, as are also the problems of food enrichment and fortification.

Nutrition 2b, c. Biochemistry and Physiology of Nutrition

Lectures. *Tuesdays, Thursdays, and Saturdays, 9–10, second period; Mondays, Wednesdays, and Fridays, 9–10, third period; and three hours per week, time to be arranged with the instructors.* Dr. HEGSTED and Dr. MAYER.

Credit 4.5 units.

This course deals with the fundamentals of the chemistry and physiology of nutrition. The chemistry, function, and metabolism of carbohydrates, fats, proteins, vitamins and essential minerals are considered. The course is planned for those specializing in nutrition and who have adequate training in biochemistry and physiology.

Prerequisite: Organic and biochemistry, physiology, and consent of instructors.

Nutrition 3c, d. The Laboratory Basis of Nutrition

Lectures and demonstrations. *Fridays, 10–12, and individual laboratory work to be arranged, third and fourth periods.* Dr. GEYER.

Credit 2 units.

This course is a survey of methods pertinent to experimental nutrition. The material covered includes biophysical and chemical technics used in nutritional studies in animal and human experimentation. Students participate in the preparation and presentation of such general topics as chromatography, spectroscopy, microbiological assay, manometric measurements, and purified diet technics. They are then instructed in the actual laboratory procedure pertaining to these technics.

Prerequisites: A basic course in biochemistry and consent of instructor.

Nutrition 4c. Dietary Evaluation

Lectures and laboratory exercises. *Wednesdays, 11–1, third period.* Dr. TRULSON.

Credit 1 unit.

Methods for obtaining a diet history are discussed and illustrated. The origins, accuracy, and use of food composition tables are considered and their use in translation of the diet history into equivalent food values is illustrated. The principles of diet therapy are discussed. Representative examples of common medical problems such as hypertension, obesity, diabetes, nephritis, and gastrointestinal disease are discussed with description of principles and application of diet therapy. Nutrition surveys are discussed. Laboratory work will consist of practical exercises in evaluating diets.

Nutrition 5d. Human Nutritional Disease

Lectures. *Mondays, Wednesdays and Fridays, 12–1, fourth period.* Dr. MANN and Dr. WADDELL.

Credit 1.5 units.

The emphasis in this course is upon (a) the clinical manifestations of nutritional diseases, (b) the implication of nutrition in the etiology of other than nutritional diseases, and (c) the application of diet and food supplements as therapeutic measures in clinical medicine.

Nutrition 6a, 6b. Nutrition Seminar.

Seminars. *Thursdays, 4–5.* Staff of the Department.

Credit .5 unit in each period.

Brief discussions of classical literature in fundamental and applied nutrition. Admission limited and subject to the approval of the instructor. In addition, a journal club covering current literature and organized with the participation of the students meets informally on a day to be announced later.

Nutrition 7c, 7d. Advanced Topics in Nutrition

Seminars. *Thursdays, 4–5.* Staff of the Department.

Credit .5 unit in each period.

Properly qualified students present a topic followed by discussion.

Prerequisites: Nutrition 2b and consent of instructor.

Nutrition 8c. Nutrition Ward Rounds

Hospital Rounds. *Saturdays, 10–12, third period.* Dr. MANN and Dr. WADDELL.

Credit .5 unit.

This course is offered to medically trained candidates who wish to spend two hours per week visiting hospitalized patients in Boston hospitals presenting medical problems of nutritional interest. Students are asked to follow the subsequent course of patients seen and report upon their progress.

Nutrition 20. Research in Nutrition

Time (at least two half-days per week) and credit to be arranged. Staff of the Department.

Facilities are available for advanced work in nutrition along the lines of fundamental research in nutrition and applied nutrition in public health and medicine.

Admission limited and subject to approval of the instructor.

DEPARTMENT OF PHYSIOLOGY

James L. Whittenberger, s.b., m.d., *Professor of Physiology* and *Head of the Department*

Stanley J. Sarnoff, a.b., m.d., *Associate Professor of Physiology*

Benjamin G. Ferris, Jr., a.b., m.d., *Assistant Professor of Physiology*

Jere Mead, s.b., m.d., *Assistant Professor of Physiology*

Edward P. Radford, Jr., m.d., *Associate in Physiology*

David B. Dill, s.b., ph.d., *Visiting Lecturer on Physiology*

Austin F. Henschel, s.b., ph.d., *Visiting Lecturer on Physiology*

Harben J. Boutourline-Young, m.b.,b.s., m.d., *Research Associate in Physiology.* (Absent 1953–54)

Willem S. Frederik, m.d., s.m. in hyg., *Research Associate in Physiology*

William H. Forbes, dr.phil., *Research Associate in Physiology*

Bertrand C. Kriete, a.b., m.d., *Research Associate in Physiology*

James P. Isaacs, s.b., m.d., *Research Associate in Physiology*

Erik Berglund, a.b., m.d., *Research Associate in Physiology*

Leon E. Kruger, s.b., m.d., *Research Associate in Physiology*

Robert B. Case, a.b., s.b., m.d., *Research Fellow in Physiology*

Lorin E. Ainger, m.d., *Research Fellow in Physiology*

Neville M. Lefcoe, b.sc., m.d., *Research Fellow in Physiology*

Malcom B. McIlroy, b.a., m.d., *Research Fellow in Physiology*

Physiology 1a, b. Human Physiology and Its Application to Public Health

Lectures and demonstrations. *Tuesdays and Thursdays, 1–2, first and second periods.* Dr. Whittenberger and associates.

Credit 2 units.

A course in human physiology, with particular emphasis on the systems and reactions of the body which are of major importance in public health problems. The course is designed primarily for students of engineering sciences; it is recommended also to those who need additional physiologic background for work in other fields. The course is prerequisite to Physiology 2d for those who lack adequate training in physiology.

Physiology 2d. Environmental Physiology

Lectures and conferences. *Tuesdays and Thursdays, 12–1, fourth period.* Dr. Whittenberger and associates.

Credit 1 unit.

The physical aspects of man's surroundings have definite and sometimes critical effects on his health and productivity. These effects can be observed universally, but are of special importance in industry, where large numbers of people are exposed to extremes of factors such as heat, barometric pressure, radiation, and atmospheric contamination.

One of the purposes of physiology instruction in public health is to provide information on the physical and mental reactions of man to his environment, as a basis for understanding of environmental health problems and their control.

Prerequisite: Physiology 1a or its equivalent.

Physiology 3d. Respiratory Problems in Industry

Lectures and demonstrations. *Tuesdays, 2–4, fourth period.* Dr. WHITTENBERGER and associates.

Credit 1 unit.

Pulmonary diseases continue to present some of the most serious medical problems in industry, despite efforts to prevent them. Recent developments in pulmonary physiology have greatly improved differential diagnosis, evaluation of disability, and therapy. The course will consider pulmonary and cardiac function tests, as well as resuscitation and other practical physiologic problems in industry.

This course is given in conjunction with Industrial Hygiene 3d. Admission is subject to the approval of the head of the Department.

Physiology 20. Research in Physiology

Properly qualified students are given opportunities to work in the laboratory provided they can devote an acceptable amount of time to such work.

DEPARTMENT OF PUBLIC HEALTH PRACTICE

HUGH R. LEAVELL, S.B., M.D., DR.P.H., *Professor of Public Health Practice* and *Head of the Department*

FRANZ GOLDMANN, M.D., *Associate Professor of Medical Care*

LEONID S. SNEGIREFF, M.D., DR.P.H., *Associate Professor of Cancer Control*

ERICH LINDEMANN, PH.D., M.D., *Associate Professor of Mental Health*

ALFRED L. FRECHETTE, M.D., M.P.H., *Assistant Professor of Public Health Practice* and *Director, Health, Hospital and Medical Care Division, United Community Services of Metropolitan Boston*

NORBERT A. WILHELM, S.B., M.D., *Assistant Professor of Public Health Practice* and *Director, Peter Bent Brigham Hospital*

W. FRED MAYES, S.B., M.D., M.P.H., *Assistant Professor of Public Health Practice* and *Health Officer, Town of Brookline, Massachusetts* (Absent 1953–54)

HELEN L. ROBERTS, A.B., M.D., M.P.H., *Lecturer on Public Health Practice*

BENJAMIN D. PAUL, A.B., PH.D., *Lecturer on Social Anthropology*

BERYL J. ROBERTS, ED.M., M.P.H., *Assistant Professor of Health Education*

MARGARET L. VARLEY, S.B., M.P.H., *Assistant Professor of Public Health Nursing*

WARREN T. VAUGHAN, JR., S.B., M.D., *Assistant Professor of Mental Health* and *Director, Division of Mental Hygiene, Massachusetts Department of Mental Health*

JOHN H. CAULEY, M.D., M.P.H., *Lecturer on Public Health Practice* and *Commissioner of Public Health, City of Boston Health Department*

LEON STERNFELD, S.B., M.D., PH.D., M.P.H., *Lecturer on Public Health Practice*

GERALD CAPLAN, B.SC., M.B.,CH.B., M.D., *Lecturer on Mental Health*

FREDERICK W. L. RICHARDSON, JR., S.B., PH.D., *Lecturer on Human Relations*

CLAIRE F. RYDER, A.B., M.D., M.P.H., *Lecturer in Geriatrics*

HOWARD A. RUSK, A.B., M.D., S.D. (hon.), *Visiting Lecturer on Public Health Practice*

WILLIAM S. STONE, S.M., M.D., PH.D. (hon.), *Visiting Lecturer on Public Health Practice*

ALTON S. POPE, A.B., M.D., DR.P.H., *Visiting Lecturer on Public Health Practice* and *Deputy Commissioner of Health, Department of Public Health of Massachusetts*

ROY F FEEMSTER, A.B., M.D., DR.P.H., *Instructor in Public Health Practice and Director, Division of Communicable Diseases, Department of Public Health of Massachusetts*

HERBERT L. LOMBARD, A.B., M.D., M.P.H., *Instructor in Public Health Practice* and *Director, Division of Cancer and Other Chronic Diseases, Department of Public Health of Massachusetts*

ROBERT E. ARCHIBALD, M.D., M.P.H., *Instructor in Public Health Practice* and *Deputy Commissioner, Department of Public Health of Massachusetts*

ARTHUR E. BURKE, S.B., M.D., M.P.H., *Instructor in Public Health Practice* and *District Health Officer, Department of Public Health of Massachusetts*

FRANKLYN B. AMOS, M.D., M.P.H., *Instructor in Public Health Practice*

DEAN W. ROBERTS, A.B., M.D., M.P.H., *Instructor in Medical Care*

CLARENCE I. STERLING, S.B., *Instructor in Public Health Practice* and *Deputy Commissioner of Health, Department of Public Health of Massachusetts*

KENNETH I. E. MACLEOD, M.B.,CH.B., M.P.H., *Instructor in Public Health Practice*

ELIZABETH B. HAGER, A.B., N.M., A.M., *Instructor in Public Health Nursing*

BROOKS RYDER, A.B., M.D., M.P.H., *Instructor in Public Health Practice*

SIDNEY LISWOOD, A.B., M.B.A., M.P.H., *Instructor in Public Health Practice*

OLIVE M. LOMBARD, B.SC., S.M. IN HYG., *Instructor in Public Health Practice*

JEAN C. AVERY, A.B., M.D., M.P.H., *Instructor in Public Health Practice*

ALEXANDER WITKOW, S.B., M.D., M.P.H., *Instructor in Public Health Practice*

MANON MCGINNIS, A.B., *Research Associate in Psychiatric Social Work*

SUZANNE T. VAN AMERONGEN, M.A., M.D., *Research Associate in Mental Health*

PEARL P. ROSENBERG, A.B., A.M., PH.D., *Research Associate in Mental Health*

PETER E. SIFNEOS, M.D., *Research Fellow in Mental Health*

ALMA E. AMOROSO, S.B., *Assistant in Public Health Practice*

MARY J. GILKEY, A.M., *Assistant in Public Health Practice*

MARIE G. MCCONNELL, *Assistant in Public Health Practice*

JAMES M. DUNNING, A.B., D.D.S., M.P.H., *Lecturer on Dental Public Health, Harvard School of Dental Medicine*

DEAN CLARK, A.B., B.A., B.SC., M.D., *Clinical Professor of Preventive Medicine* and *General Director of the Massachusetts General Hospital*

STANLEY COBB, A.B., M.D., *Bullard Professor of Neuropathology*

PAUL K. LOSCH, D.D.S., *Assistant Professor of Clinical Dentistry*

SHIELDS WARREN, A.B., M.D., *Professor of Pathology at the New England Deaconess Hospital*

F. WILLIAM MARLOW, JR., S.B., M.D., *Associate in Medicine*

HENRY H. BREWSTER, A.B., M.D., *Instructor in Psychiatry*

LeMoyne White, A.B., M.D., *Instructor in Psychiatry*

Robert H. Hamlin, A.B., S.B., M.D., M.P.H., LL.,B., *Instructor in Legal Medicine* and *Health Officer, Town of Brookline.*

The general objective of the Department of Public Health Practice is to develop plans and procedures for the administration of public health programs in governmental and in voluntary health agencies. Work is based on other courses given in the school and the general background of knowledge in the natural and physical sciences and the behavioral sciences, and is conducted through lectures, seminars, work shops, independent investigation and field observations.

One course in the Department, Public Health Practice 1b, is required of all candidates for the Master of Public Health degree. Other courses are elective although it is anticipated that all majors in public health practice will take Public Health Practice 10c, d and the accompanying field work, Public Health Practice 30c. Most students majoring in this field of public health practice should also take Public Health Practice 2b, Organization of Medical Care.

Special curricula are designed for health officers, cancer control administrators, medical care administrators, mental health workers, veterinary public health workers, dental public health workers, public health nurses and health educators.

Public Health Practice 1b. Principles of Public Health Practice

Seminars and conferences. *Mondays, Wednesdays and Fridays, 9–11, second period.* Dr. Leavell and associates.

Credit 3 units.

An introduction to public health practice in which the principles of understanding people, of administrative organization, personnel management, financing of health services and public health law are presented as the basis of public health administration.

Special consideration is given to the work of the various members of the public health team, and to the types and inter-relationships of the official and voluntary agencies in which they work.

Maternal and child services involve many members of the health team, and they are needed in all parts of the world. Therefore, examples of such services receive special emphasis.

Public Health Practice 2b. Organization of Medical Care

Lectures and discussions. *Tuesdays and Thursdays, 11–1, second period.* Dr. Goldmann.

Credit 2 units.

An orientation course on the development and present state of medical-care programs organized under the auspices of public and voluntary agencies. Discussion of the resources in medical and related personnel, and in hospitals, clinics, and custodial institutions; of the utilization of existing services and the cost of medical care; and of the basic methods of organizing and paying for professional and hospital services. Description of tax-supported medical-care programs administered by local, state, and federal agencies and of voluntary prepayment plans of various types.

Public Health Practice 3b. Psychosocial Problems

Lectures and seminars. *Wednesdays, 2:30–4:30, second period.* Dr. LINDEMANN and associates.

Credit 1 unit.

This course is concerned with the study of abnormal behavior resulting in social problems and with the mechanisms which produce abnormal mental reactions. Methods of handling these problems through community resources are discussed.

Public Health Practice 4a. Control of Cancer

Lectures and discussions. *Tuesdays and Thursdays, 11–1, first period.* Dr. SNEGIREFF.

Credit 2 units.

Cancer control is discussed from the viewpoint of the administrator. Authorities in the various aspects of the cancer control program discuss specific phases of the problem. Discussion periods are arranged to supplement lectures and to give the administrator a balanced view of the cancer field in clinical, research, and service aspects.

Public Health Practice 5a. Control of Tuberculosis

Lectures and field exercises. *Tuesdays and Thursdays, 2–4, first period.* Dr. POPE.

Credit 2 units.

The bacteriology, pathology and epidemiology of tuberculosis are reviewed. The impact of economic, social and genetic factors upon the disease are considered. The approach is that of the administrator rather than that of the clinician, although specialists in various aspects of tuberculosis will lead some of the discussions. Field trips include visits to sanatoria, mass chest x-ray projects and tuberculosis clinics.

Public Health Practice 6d. Venereal Disease Control

Lectures, demonstrations, and discussions. Time and credit to be arranged.

This course presents, first, the basic medical data regarding syphilis, gonorrhea, chancroid, granuloma inguinale, lymphogranuloma venereum, yaws and other syphiloid diseases, as communicable diseases, and second, their epidemiology, prevention, and administrative control. During the first part of the course the subject matter is presented by means of lectures, motion pictures, slides, and clinical demonstrations. The second part is devoted to lectures and class discussions of practical problems involved in the public health control of venereal diseases.

The course will not be given for less than ten students.

Public Health Practice 7c, d. Dental Public Health Practice

Conferences, seminars, and field study. Time and credit to be arranged. Dr. DUNNING and associates.

This course is designed particularly for dentists.

Emphasis is laid on the application of such sciences as epidemiology and biostatistics to dental problems and upon public health administration in the dental field.

Opportunities for clinical experience are available at the Harvard School of Dental Medicine under certain circumstances.

Public Health Practice 8d. Veterinary Public Health Practice

Seminars. Time and credit to be arranged.

Discussion of advanced problems of veterinary public health practice, with particular reference to integration in the program of official and voluntary health agencies.

The course will not be given for less than ten students.

Public Health Practice 10c, d. Public Health Administration, Health Education, Public Health Nursing and Social Work in Health Agencies

Seminars and field study. *Mondays, Wednesdays and Fridays, 2–4, third and fourth periods.* Drs. LEAVELL and FRECHETTE; Misses ROBERTS, VARLEY and RICE.

Credit 6 units.

Administration:

The practical application of public health principles is developed through case studies, surveys and field study in nearby communities. General adminis-

trative problems are discussed, as well as those in the fields of health education, public health nursing and social work. Students are assigned problems or situations to study and report upon for class discussion. The importance of teamwork in public health is stressed.

Health Education:

The important role of each team member in health education is emphasized. Community-wide and special health education programs are described, and procedures and media studied.

Public Health Nursing:

Public health nursing in both official and voluntary agencies is emphasized with special attention to administrative needs and in relationship to the total community health program.

Social Work in Health Agencies:

The development of social work in health programs is reviewed, and through case material, the principles and methods of social work in health programs is discussed.

Public Health Practice 30c, d must be taken in connection with this course to provide opportunities for field study.

Prerequisite: Public Health Practice 1b.

Public Health Practice 11c, d. Administration of Medical-Care Programs

Seminars, field observations, and exercises. *Tuesdays and Thursdays, 11–1, third and fourth periods.* Dr. GOLDMANN.

Credit 4 units.

An advanced seminar enlarging on the basic subject matter presented in Public Health Practice 2b, Organization of Medical Care. Discussion of the basic principles and problems of sound administrative organization of medical-care programs. Study of the administrative practices actually followed by public agencies in charge of tax-supported services and by voluntary agencies administering prepayment plans for hospital care, physicians' service, or both. Discussion of the technics of surveying and appraising medical-care needs and medical-care programs. Analysis of the experience gained in the operation of various types of tax-supported and insurance plans. Visits to selected medical-care facilities and to administrative agencies, public and voluntary. Supervised studies of typical organizations.

Prerequisite: Public Health Practice 2b.

Public Health Practice 30c, d must be taken in connection with this course to provide opportunities for field study.

Public Health Practice 12c, d. Administrative Use of Statistics

Lectures and seminars. *Tuesdays, 2–4, third and fourth periods.* Staff of the Department and of other Departments.

Credit 2 units.

This is a joint course with the Departments of Biostatistics and Maternal and Child Health. See Biostatistics 4c, d for description.

Public Health Practice 13d. Hospital Organization and Community Relationships

Lectures and field exercises. *Wednesdays and Fridays, 11–1, fourth period.* Field trips to be arranged. Dr. WILHELM.

Credit 2 units.

This course is designed to give the health officer basic information on the organization and functions of the typical hospital and, especially, on its relationship to the various agencies engaged in health activities and to the community as a whole. No attempt is made to develop hospital administrators. The course deals with the responsibilities of a hospital administrator towards a health official who may have general charge of hospitals incorporated in his department. Therefore, emphasis is on fundamental problems, rather than on the details of hospital administration.

This course will not be given for less than ten students.

Prerequisite: Public Health Practice 2b.

Public Health Practice 14c, d. Mental Health Problems

Seminars. *Tuesdays, 2–4, third and fourth periods.* Dr. LINDEMANN.

Credit 2 units.

A series of discussions dealing with factors in individual development, family context, and social structure of the community which are relevant to emotional disturbances. Mental health problems, such as control of delinquency, mental disease, psychoneurosis, and psychosomatic disorders are reviewed, both from the point of view of the clinic and of community resources. An effort then is made to outline a program for community mental health, including the problems involved in the efforts of public agencies and voluntary groups.

Prerequisite: Public Health Practice 3b.

Public Health Practice 15c, d. Cancer Control Administration

Seminars and field study. Time and credit to be arranged. Dr. SNEGIREFF.

Discussion of advanced problems in administration of cancer control programs of official and voluntary health agencies at national, state, county, and

community levels, and of statistical problems related to cancer etiology and cancer control.

Observation and field study in cancer diagnostic, combined diagnostic, and therapeutic clinics, cancer detection clinics, cancer hospitals, related activities, and facilities. This course is designed primarily for physicians who are concerned with state-wide cancer programs.

Prerequisite: Public Health Practice 4a.

Public Health Practice 16d. Control of Communicable Disease

Seminars. *Fridays, 9–11, fourth period.* Dr. Feemster and Dr. Pugh.

Credit 1 unit.

This course is given jointly with the Department of Epidemiology. (See Epidemiology 6d.) Epidemiologic study of a disease problem is basic to its control; therefore Epidemiology 5c is a prerequisite. Specific problems and situations are studied from the administrative standpoint in this course. Attention is centered on elements of control programs desirable with personnel and facilities available in the given situations under study.

Prerequisite: Epidemiology 5c.

Public Health Practice 17d. Administration of Tropical Public Health Programs

Conferences and seminars. *Wednesdays, 11–1, fourth period.* Staffs of the Departments participating.

Credit 1 unit.

This is a joint course with the Department of Tropical Public Health. See Tropical Public Health 2d for description.

Public Health Practice 18d. Community Organization for Disaster

Lectures and seminars. *Mondays, 4–5, fourth period.*

Credit .5 unit.

An analysis of various types of disasters, such as floods, enemy action, etc., which may afflict a community causing a large number of casualties and displacing populations. The organization of a disaster plan, the handling of casualties through first aid and improvised hospitals, the problem of supplies, laboratory service and records are discussed. The place of environmental sanitation, including medical care of displaced populations and special problems such as biological and chemical warfare and atom bombing are included. The legal and financial aspects and the training of personnel are also included.

Public Health Practice 20. Special Assignments for Individual Work

Advanced students are offered the opportunity to undertake special studies in the practice of organized health services. The student must have completed Biostatistics 1a, b and Public Health Practice 1b before registering for this work.

The following course offered at the Harvard Law School is open to students at the School of Public Health:

State and Local Law Administration: Public Health

Seminar at the Harvard Law School in Cambridge. *Two hours a week, time to be announced, during the spring term.* Assistant Professor SACKS.

Credit 2 units.

This seminar will seek to analyze, critically but constructively, the processes through which regulatory laws are administered by state and local agencies and officials. With this in view, study will be directed to the wide range of regulatory laws administered by public health authorities, especially those laws which have traditionally been of state or community rather than federal concern. The seminar will be open to students from the School of Public Health (many of whom are experienced administrators), with the expectation that the resulting differences among the seminar students in professional knowledge, experience, and approaches to the problems considered, will lead to fruitful interchange.

FIELD STUDY IN PUBLIC HEALTH PRACTICE

Public Health Practice 30c, d. Field Observation

Thursdays, 2–5, third and fourth periods. Credit to be arranged.

These periods are designed to provide opportunity for field observations, individual field studies, and seminar discussions in health service administration, public health nursing, social work and health education. Students majoring in Public Health Practice or those electing either Public Health Practice 10c, d or 11c, d are required to register for this course, and may earn one or more units of credit.

Fourth period. Time and credit to be arranged.

Conferences in hospital administration designed for students who elect Public Health Practice 13d and for certain others who are interested in attending daily administrative conferences at the Peter Bent Brigham Hospital. Limited to five students.

Public Health Practice 31c, d. Assignments to Field Agencies

Feb. 1–6, April 5–10.

Credit 1 unit for each week.

Assignments for continuous periods to health departments or voluntary health agencies (1) To observe activities of the various subdivisions, work of the administrator or other specialized administrative personnel, and community relationships, or (2) To make group surveys or studies of community health services under the supervision of staff members of the Department of Public Health Practice.

Offered in conjunction with Public Health Practice 4a, 5a, 6d, 10cd, 11cd, 13d, 14cd and 15cd.

Public Health Practice 32b, 32c, 32d. Introduction to Community Health Practice

Day to be arranged, 2–5, Whittier Street Health Center.

Credit 1 unit each period.

An opportunity for a limited number of students to study for an eight week period the health and welfare resources of an urban community under the guidance of the field unit staff through the case study method.

DEPARTMENT OF SANITARY ENGINEERING

Gordon M. Fair, s.b., s.m. (hon.), dr. ing. (hon.), *Abbot and James Lawrence Professor of Engineering, Gordon McKay Professor of Sanitary Engineering* and *Head of the Department*

Edward W. Moore, a.m., *Associate Professor of Sanitary Chemistry*

Harold A. Thomas, Jr., s.d., *Associate Professor of Sanitary Engineering*

Shih L. Chang, m.d., dr.p.h., *Associate Professor of Sanitary Biology*

J. Carrell Morris, s.b., ph.d., *Associate Professor of Sanitary Chemistry*

Sanitary Engineering 1a, b. Principles of Sanitation

Lectures and demonstrations. *Tuesdays, Thursdays, 10–11, and Saturdays, 10–12, first and second periods.* Professors Fair, Drinker and Yaglou, Associate Professors Moore and Silverman, Dr. Chang.

Credit 4 units.

This course is entitled Principles of Sanitation, and endeavors to live up to the name by emphasizing the broad engineering principles useful in environmental control. An attempt is made to present these principles in a manner comprehensible to students who have no engineering background.

Technics of control are discussed, but are presented as illustrations of principle, not as rule-of-thumb procedure which the student is expected to learn by rote. A few field visits are made to show the application of principles in practice.

The ultimate objective of the course is not the conversion of the student into a sanitation expert, ready to design a water plant, eliminate rats, or prescribe a ventilation system, but rather to prepare him to supervise, to cooperate with, and to understand the people who are to do the job. It also acquaints him with the nature and extent of the problem, with what can be and has been accomplished by sanitation, and with what may be expected to be accomplished in the future.

The topics considered include: water supply and purification; sewerage and sewage treatment; refuse collection and disposal; food, milk and shellfish sanitation; arthropod and rodent control; ventilation and air conditioning; noise control; illumination.

Sanitary Engineering 2a, b. Sanitary Bacteriology

Lectures and laboratory. *Tuesdays, Thursdays and Saturdays, 8–9 and Wednesdays, 1–5, first and second periods.* Dr. CHANG.

Credit 5 units.

Morphology, physiology, and cultivation of bacteria. Quantitative bacteriology. Effect of physical and chemical agents on bacteria. Mechanisms of antibacterial activity. Differentiation of Enterobacteriaceae. Immunity. Bacteriology and sanitary control of air, water, and swimming pools. Soil and sewage microbiology. Viruses.

This is the same course as Engineering 274a.

Sanitary Engineering 3c, d. Sanitary Bacteriology and Parasitology

Lectures and laboratory. *Mondays, Wednesdays and Fridays, 8–9, and Tuesdays, 9–1, third and fourth periods.* Dr. CHANG.

Credit 5 units.

Bacteriology and sanitary control of milk and milk products, foods and eating establishments, and shellfish. Parasitology and control of diseases caused by zoological parasites. Arthropods of medical importance and their control. Rodents and rodent control.

This is the same course as Engineering 274b.

The following courses of instruction offered in the Division of Applied Science of the Graduate School of Arts and Sciences are open to properly qualified students:

Engineering 270a. Hydrology and Hydraulics of Water Supply and Waste Water Disposal. Professor Fair.

Engineering 270b. Physics and Hydraulics of Water and Waste-Water Treatment. Professor Fair.

Engineering 271. Chemistry of Water Supply. Associate Professor Moore.

Engineering 272a. Sanitary Chemistry: Analytical. Associate Professor Morris.

Engineering 272b. Sanitary Chemistry: Physical and Nuclear. Associate Professor Morris.

Engineering 273. Chemistry and Biology of Waste-water Disposal. Associate Professor Thomas.

Engineering 275. Industrial Water Supply and Waste-water Disposal. Associate Professor Moore.

Engineering 276. Instrumental Techniques in Water and Waste-water Analysis. Associate Professor Morris.

Engineering 277. Engineering Applications of Colloidal and Surface Chemistry. Associate Professor Morris.

DEPARTMENT OF TROPICAL PUBLIC HEALTH

JAMES S. SIMMONS, S.B., M.D., PH.D., DR.P.H., S.D. (hon.), *Professor of Public Health* and *Acting Head of the Department*

GEORGE C. SHATTUCK, A.B., M.D., A.M. (hon.), *Clinical Professor of Tropical Medicine, Emeritus*

DONALD L. AUGUSTINE, S.B., S.D., S.D. (hon.), A.M. (hon.), *Professor of Tropical Public Health* and *Executive Head of the Department*

QUENTIN M. GEIMAN, S.M., PH.D., *Associate Professor of Tropical Public Health*

THOMAS H. WELLER, A.B., S.M., M.D., *Associate Professor of Tropical Public Health*

JUSTIN M. ANDREWS, PH.B., S.D. (hon.), *Visiting Lecturer on Tropical Public Health*

PAUL F. RUSSELL, A.B., M.D., M.P.H., *Visiting Lecturer on Tropical Public Health*

EDWARD I. SALISBURY, M.D., *Visiting Lecturer on Tropical Public Health*

FRED L. SOPER, A.B., S.M., M.D., DR.P.H., *Visiting Lecturer on Tropical Public Health*

GEORGE M. SAUNDERS, A.B., M.D., *Visiting Lecturer on Tropical Public Health*

LEWIS W. HACKETT, A.B., M.D., DR.P.H., *Visiting Lecturer on Tropical Public Health*

LOUIS L. WILLIAMS, JR., M.D., *Visiting Lecturer on Tropical Public Health*

SIR GORDON COVELL, M.B.,B.S., M.D., D.P.H., *Visiting Lecturer on Tropical Public Health*

WILLARD H. WRIGHT, D.V.M., S.M., PH.D., *Visiting Lecturer on Tropical Public Health*

HENRY VAN ZILE HYDE, A.B., M.D., *Visiting Lecturer on International Health*

HENRY E. MELENEY, A.B., M.D., *Visiting Lecturer on Tropical Public Health*

RUTH A. THOMAS, A.M., M.P.H., *Instructor in Tropical Public Health*

ELI CHERNIN, S.B., A.M., S.D., *Instructor in Tropical Public Health*

CHARLES E. BECKER, PH.D., *Research Associate in Tropical Public Health*

JOHN H. HANKS, S.B., PH.D., *Lecturer on Bacteriology and Immunology*

Students wishing to concentrate in Tropical Public Health must possess a knowledge of pathology, in addition to the basic course requirements for admission as degree candidates.

Tropical Public Health 1c, d. Conservation of Health in Tropical Countries

Lectures, laboratory exercises, and demonstrations. *Tuesdays and Thursdays, 2–5, third and fourth periods.* Dr. AUGUSTINE, Dr. GEIMAN, Dr. WELLER and associates.

Credit 5 units.

This course deals with the important health hazards of tropical regions. It is concerned with the numerous factors which combine to exert a deleterious effect on human welfare and efficiency in tropical countries. These include climate, environment, food supply, density of population, social and economic conditions, and the more serious disease problems of the tropics. The clinical aspects of tropical medicine are not neglected, but the main emphasis will be placed on the recognition of diseases and their prevention or control. Special consideration is given to recent advances in our knowledge of the insect-borne diseases, including their distribution and incidence, host-parasite relations, the diagnostic procedures available for their identification, and the best methods available with which to protect both the individual and the community against their attack.

The content of this course is contingent upon an adequate background in the pre-clinical medical sciences, especially histology and pathology. Students who lack training in these disciplines will be admitted only subject to the approval of the head of the department.

Tropical Public Health 2d. Administration of Tropical Public Health Programs

Lectures and conferences. *Wednesdays, 11–1, fourth period.* Staffs of the Departments participating.

Credit 1 unit.

This course is given jointly with the Department of Public Health Practice (see Public Health Practice 17d). It is designed to acquaint the student with administration of public health programs in tropical countries. Formal presentation of subjects dealing with actual health conditions and problems in representative tropical regions will be made by visiting lecturers. These will be followed by informal conferences in which the students will be expected to participate. Careful consideration will be given to the possibility of developing more effective tropical health programs through application of administrative technics adapted to the needs of different peoples and climates. Registration is open to all students but admission for credit is subject to the approval of the head of the Department.

Tropical Public Health 3d. Arthropods in Relation to Human Disease

Lectures and laboratory exercises. *Fridays, 9–11; Wednesdays and Fridays, 2–5, fourth period.*

Credit 3 units.

This is a joint course with the Department of Microbiology. See Microbiology 14d for description.

Tropical Public Health 4d. International Aspects of Tropical Public Health

Conferences. *Mondays, 11–1, fourth period.* Dean SIMMONS.

Credit 1 unit.

These conferences are available to a small group of selected students interested in the broader aspects of tropical public health, with special reference to specific problems that have an important bearing on international health. Conferences are informal and the students are expected to take an active part in all of the discussions, which are limited to international problems of current interest. Admission is by permission of the instructor.

Tropical Public Health 5c, d. Seminar in Tropical Public Health

Seminars and discussions. *One hour session twice a month throughout the third and fourth periods. Time to be arranged.* Staff of the Department.

Credit .5 unit.

Students particularly interested in Tropical Public Health will meet with the staff members for the presentation and discussion of current literature and original investigations.

Prerequisite: Tropical Public Health 1c, d or its equivalent.

Tropical Public Health 6b. Parasitology

Lectures, laboratory exercises, and demonstrations. *Tuesdays, Thursdays and Saturdays, 10–1, December 1–19.* Dr. AUGUSTINE, Dr. GEIMAN, Dr. WELLER and associates.

Credit 1.5 units.

This course is designed primarily for students in the School of Medicine. It is open, however, to a limited number of students registered in the School of Public Health who wish to review the subject. The important helminth and protozoan parasites of man are considered with reference to their geographic distribution, identification, mode of transmission, pathogenesis, immune reactions, and methods for prevention and control. Clinical aspects and chemotherapy of parasitic diseases are discussed. Emphasis is given to methods of laboratory diagnosis. Arthropods of parasitologic importance are briefly surveyed with special consideration of insects related to human disease.

Tropical Public Health 20. Research

Opportunity is offered to qualified students to work on problems in tropical public health under the supervision of the staff. An extensive number of parasites of medical importance are maintained for studies on metabolism, nutrition, host-parasite relations, and chemotherapy. Arrangements may be made for students to work in laboratories of hospitals situated within the tropics or to cooperate in organized field investigations.

Tropical Public Health 40d. Laboratory Technics

Conferences and laboratory. Staff of the Department.

Time and credit to be arranged.

Students are offered the opportunity to learn laboratory technics in handling parasitic infections in cultures and in laboratory animals, and to gain experience in routine laboratory diagnosis.

Prerequisite: Enrollment in Tropical Public Health 1c,d.

GENERAL INFORMATION

Registration

Registration in the School of Public Health for the academic year 1953–54 is from Monday, September 21 to Friday, September 25. A faculty advisor is assigned to each student to consult with him about his selection of courses and to advise him throughout the year. Adequate time during registration week should be allowed by the student for discussion of his program with his advisor and the Dean or Assistant Dean of the School, who must approve each schedule.

All students who are not citizens of the United States will be referred before registration to the Counsellor for Foreign Students, 24 Quincy Street, Cambridge, where they will present a statement of admission, show their passports, and fill out a Student Registration form. They will then receive a card for presentation at registration, showing they have been cleared by the office of the Counsellor for Foreign Students.

Veterans

Information about the procedure to be followed by students who are eligible for educational benefits under either of the G.I. Bills or the Rehabilitation Bill, may be secured from the Secretary of the School or from the Veterans Office, Weld Hall, Cambridge.

Veterans who have been discharged from the armed services within a year must fill out a discharge questionnaire. Admission in the case of such a veteran is subject to the approval of the Director of the Health and Medical Care Plan before registration.

Housing

There are no dormitories for students of the School of Public Health but they may get their meals at Vanderbilt Hall dining room, the Medical School dormitory. Single students usually can find furnished rooms or apartments in the vicinity of the School, or in nearby residential sections such as Brookline. Houses or apart-

ments for families are more difficult to obtain and therefore married students who plan to bring their families are advised to arrive in Boston at least three weeks in advance of the opening of School, in order to have time to secure living quarters. The School is glad to be of assistance by supplying information about available places, but the responsibility for securing housing rests with the students.

Fees and Expenses

The fee for tuition for each academic year is $770 for all full-time students.* For part-time students the fee varies according to the courses taken and is based on the proportion of the annual fee for instruction which the credit units for each course bear to the total number of credits necessary for the degree of Master of Public Health, plus $5.00 for each course. For example, a part-time student taking a course with a credit unit value of 2 would pay a tuition fee of $43.50; a student taking a course with a credit unit value of 4 would pay $82.00.

The fees required of candidates for the degrees of Master of Science in Hygiene, Doctor of Science in Hygiene, and Doctor of Public Health will be prorated according to the course credits (including research courses) taken in any year on the same basis as mentioned above for part-time students working for the degree of Master of Public Health, but the total amount of fees paid toward any degree must equal the minimum residence tuition requirement for the specific degree. The $5.00 course fees required of part-time students are not included as prorated credit fees. Students who have completed the course work and the residence requirement for any degree, or have paid a total of two years' full tuition toward the doctorate (at least one of which is subsequent to the completion of work equivalent to the requirements for the master's degree) and still have degree requirements to be fulfilled, shall pay, for a period which shall not ordinarily extend beyond two additional years, a tuition fee of half-rate per year for full-time work, and in proportion for less

* Beginning with the year 1954–55, tuition will be increased to $1,150 a year, plus the health fee.

than full-time work. Residence is interpreted to mean that an individual is registered as a student and is using one or more of the facilities of the University. Residence may be completed on a part-time basis in proportion to the amount of fees paid relative to the total fee required to fulfill the minimum residence requirement, but in no case shall the tuition fee be less than $50 per half-year for students, either part-time or full-time, who are in residence. A fee of $25 per half-year shall be charged for any student completing degree requirements away from Harvard University.

Each full-time student will be charged a medical and hospital fee of $50 per year. Part-time students working at the *rate* of substantially half-time or less and living at home may be excused from the payment of such fee at any time within two weeks after their registration, upon the recommendation of the Dean.

Bills for tuition and fees will be issued and payable as follows:

Issued	*Payable*	
At registration		¼ of the tuition for the year ½ medical and hospital fee for the year
Nov. 20	Dec. 10	¼ of the tuition for the year board through October 31 miscellaneous charges
Jan. 20	Feb. 10	¼ of the tuition for the year ½ medical and hospital fee for the year board through December 31 miscellaneous charges
April 20	May 10	¼ of the tuition for the year board through March 31 miscellaneous charges
June 9 *	June 16	board to the end of the year miscellaneous charges
June 30	July 15	board to the end of the year miscellaneous charges

* Applies only to candidates for degrees.

Students who are candidates for degrees must have paid all dues to the University at least one day before the day upon which the degrees are to be voted. A student who leaves during the year is charged to the end of the tuition period in which he leaves provided before that time he gives the Dean notice in writing of his withdrawal; otherwise he is charged to the end of the tuition period in which such notice is given.

A student who leaves the University for any reason whatever must pay all charges against him immediately upon receipt of a bill from the Bursar. Every student will be held responsible for the payment of fees until he has notified the Dean of his intention to withdraw from the School.

All term bills will be sent to the student at his local address unless the Bursar is requested in writing to send them elsewhere.

Any student whose indebtedness to the University remains unpaid on the date fixed for payment is deprived of the privileges of the University until he is reinstated. Reinstatement is obtained only by consent of the Dean of the School in which the student is enrolled, after payment of all indebtedness, and a fine of $10 for late payment.

Bond Requirement

Upon entrance to the School every student is required to file with the Bursar a bond in the sum of $500 as security for payment of University bills. The bond must be signed by two bondsmen, both of whom must be citizens of the United States, or by a surety company duly qualified to do business in Massachusetts. No officer or student of the University will be accepted as a bondsman and in no case will more than one parent be accepted. In lieu of the bond a student may deposit with the Bursar $500 in United States Treasury coupon-bearing bonds, or $500 in cash, which will bear no interest. Blank forms of bonds may be obtained at the Dean's office or from the Bursar.

Student Health Service

Under a new plan students in the School will receive medical and hospital services from the Peter Bent Brigham Hospital, adjacent to the School, at a fee of $25.00 per term. All full-time students will be required to pay the fee, with the exceptions noted below. This entitles the student to medical advice and treatment and necessary hospitalization, including ancillary service such as laboratory and x-ray.

Since the hospitalization will be provided under a contract with Blue Cross, hospitalization will be available not only in Boston but elsewhere and the hospital benefits will run for a full twelve-month period.

Students who already have Blue Cross coverage may be able to transfer their contracts to the University plan in which case the cost of the Blue Cross will be deducted from the total fee.

Army, Navy, Air Force and Public Health Service officers will pay only the part of the fee to cover office and home care and their hospitalization will be provided by the services of which they are members.

Every new student paying the medical fee is required to undergo a complete medical examination. This is done by designated appointment, shortly after admission to the School.

Evidence of having been satisfactorily vaccinated is required for entrance to Harvard University and a form for certification for this purpose is sent to each student who is accepted for admission.

Any illness necessitating absence from classes should be reported to the Student Health Office by the student, or an attending physician, and to the Information Office at the School.

In order to cope with the rather strenuous schedule of work imposed by the School, it is essential that students be in excellent physical and mental health. Prospective students are urged to undergo a thorough examination to satisfy themselves of their fitness before making arrangements to enter the School.

Fellowships and Scholarships

The School of Public Health has no fellowships or scholarships of its own. Most students at the School are financed through fellowships granted them by governmental health authorities or by private foundations or other organizations interested in furthering education and training in various aspects of public health. The Dean's office is prepared to furnish qualified applicants with the names of organizations sponsoring fellowship programs, if it appears that an application may properly be made to one or more of them. Occasionally a department of the School may have research funds at its disposal permitting it to grant limited fellowships aimed at a particular phase of its research program.

STUDENTS, 1952–53

Degree Candidates and Full-Time Special Students

Ahmad, Nazir, M.B.,B.S., D.P.H.	Lahore, Pakistan
Ari, Azmi B., M.D.	Ankara, Turkey
Awan, Akhtar H., M.B.,B.S.	Lahore, Pakistan
Babbott, Frank L., Jr., A.B., M.D.	Bernardsville, N. J.
Baker, Hinton J., S.B., M.D.	Washington, D. C.
Barrow, Philip G., M.B., CH.B., D.P.H., D.T.M.	Georgetown, British Guiana
Bell, Samuel D., Jr., A.B., M.D.	Brattleboro, Vt.
Bernstein, Nan, S.B.	Columbus, Nebr.
Billette, Jacqueline, B.A., B.SC.	Montreal, P.Q., Canada
Brent, Frank D., M.D.	Aylmer, Ont., Canada
Buranakarl, Chote, M.D.	Bangkok, Thailand
Burgoyne, William E., S.B., S.M.	Lake Success, L. I., N. Y.
Calabi, Ornella, B.SC., M.SC., S.M.	Chicago, Ill.
Clarke, David A., B.SC., M.D.	Kelowna, B.C., Canada
Coe, Lloyd W., S.B.	Juneau, Alaska
Cohn, Helen D.	Durban, South Africa
Coleman, Richard D., S.B. IN C.E., S.M. IN ENGIN.	Fort Wayne, Ind.
Colford, Horace B., A.B., M.D.	Halifax, N.S., Canada
Cope, William H., A.B., M.D.	Wellsville, Ohio
Costamaillere, Luis L., B.SC., M.D.	Santiago, Chile
Craig, John P., M.D.	West Liberty, Ohio
Cunningham, Richard E., A.B.	Pittsburgh, Pa.
Cvejanovich, George J., S.B.	Chicago, Ill.
Dan, Phan H., M.D.	Saigon, Vietnam
Davis, Thomas, R. A. H., M.B.,CH.B., D.T.M.&H.	Rarotonga, Cook Islands
Drolette, Margaret E., A.B.	Cambridge, Mass
Dunham, Frederick A., M.D.	Melrose, Mass.
Eylan, Emanuel, M.SC., PH.D., M.D.	Tel Aviv, Israel
Farrisey, Ruth M., S.B.	Chestnut Hill, Mass.
Fillios, Louis C., A.B.	Cambridge, Mass.
Fitzgerald, Katharine E., S.B.	Dorchester, Mass.
Frederiksen, Harald, M.D.	Brookline, Mass.
Gallo, Arturo, M.D.	Santiago, Chile
Gandier, John C., D.V.M.	Brockville, Ont., Canada
Harvey, Bryan H., B.A., M.A.	Altrincham, Cheshire, England
Hazarika, Chaitanya N., M.D., D.T.D.	Shillong, India
Huenemann, Ruth L., S.B., S.M.	Knoxville, Tenn.
Hultin, Holger L., M.D.	Helsinki, Finland

Johnson, Mary L., A.B., S.M.	Seattle, Wash.
Jones, Allen R., Jr., S.B. IN CHEM. ENGIN.	Fanwood, N. J.
Kavanagh, Arthur J., Jr., S.B., S.M.	Salem, Mass.
Kelly, Dorothy N., S.B.	Detroit, Mich.
Kitson, Nicholas G., S.B.	Haverhill, Mass.
Kochwa, Shaul, M.SC., PH.D.	Jaffe, Israel
Kusama, Hideo, M.D.	Kanagawa-Ken, Japan
Kyee, Wee Tin, M.B.,B.S.	Rangoon, Burma
Lawson, John D., M.D.	Nashville, Tenn.
Lehman, Edward B., A.B., M.D.	Tarentum, Pa.
London, Morris, A.B., ED.M.	Malden, Mass.
Lonergan, Lester H., A.B., M.D., M.P.H.	Loma Linda, Calif.
MacIsaacs, Rosemary M., S.B.	Cohasset, Mass.
MacMahon, Brian, M.R.C.S., L.R.C.P., M.B., CH.B., D.P.H., PH.D.	Birmingham, England
Mäki, Helmi K.	Helsinki, Finland
Martin, Geoffrey M., A.B., M.D.	Topeka, Kans.
Mashayekhi, Mohamed B., M.D., M.P.H.	Tehran, Iran
Matossian, Garabed S., A.B., M.D.	Beirut, Lebanon
Mateyka, Milan R., M.D.	New Milford, N. J.
Melvin, Walter W., Jr., M.D.	Denver, Colo.
Millar, Jack W., A.B., M.D., M.P.H., S.M. IN HYGIENE (in absentia)	Palo Alto, Calif.
Minard, David., S.B., PH.D., M.D.	Bethesda, Md.
Miyasaka, Tadao, M.D.	Tokyo, Japan
Moon, Young B., A.B.	Taegu, Korea
Murata, Ryosuke, M.D., D.MED.SC.	Iwate-ken, Japan
Myers, Ira L., S.B., M.D.	Vinemont, Ala.
Ortega, Raul A., M.D.	Concepción, Chile
Pan, Chia-tung, B.SC., M.D.	Taiwan, China
Philip, Robert N., M.D.	Virginia Beach, Va.
Prince, Julius S., A.B., M.D., M.P.H.	Jamestown, N. Y.
Quinn, Robert H., S.B., M.D.	Clifton, N. J.
Reynolds, William E., S.B., M.D., M.P.H.	Burnett, Wis.
Ristori, Conrado C., M.D.	Santiago, Chile
Roberts, Beryl J., S.B.ED., M.ED., M.P.H.	Wellesley, Mass.
Rosenau, Barbara J., A.B., M.S.P.H.	Beverly, Mass.
Rosner, S. Steven, S.B.	Revere, Mass.
Sambhavaphol, Poonsakdi, M.B.	Bangkok, Thailand
San Agustín, Felicísimo M., D.V.M.	Quezón City, Philippines
Sarhan, Ahmed E., B.SC., M.SC.	Cairo, Egypt
Schwartz, Jerrold J., A.B., M.B., M.D.	Brooklyn, N. Y.

Shouse, Samuel S., A.B., M.D.	Appomattox, Va.
Singer, Ralph C., A.B., M.D.	Park Ridge, Ill.
Smillie, David, A.B., A.M.	Essex Falls, N. J.
Sonna, Deena, L.M.P.	Deccan, India
Stubbs, Trawick H., S.B., S.M., M.D.	Grosse Pointe, Mich.
Sullivan, Veronica C., S.B.	Providence, R. I.
Taylor, Albert A., S.B., D.V.M.	Arcata, Calif.
Temoche, Abelardo, M.B., M.D.	Lima, Peru
Ten Haaf, Diane J.,	The Hague, Netherlands
Toledo, Luiz A. M., M.D.	São Paulo, Brazil
Trayner, Hampton H., S.B., M.D.	Colfax, Wash.
Turner, James E., A.B.	Savannah, Ga.
Valadian, Isabelle, M.D.	Boston, Mass.
van den Berg, Anna S., B.SC.	Zastron, South Africa
Vásquez, Martin, M.D.	Buenos Aires, Argentina
Vinson, John W., S.B.	New York, N. Y.
Virkkunen, Ester M., M.D.	Joensuu, Finland
Whalen, Robert P., M.D.	Ravena, N. Y.
Wilson, Byron K., S.B., M.D.	Salt Lake City, Utah
Wyon, John B., B.A., M.B., B.CH., M.R.C.P.	London, England
Yliruokanen, Aino S., M.D.	Helsinki, Finland
Žarković, Grujica, M.D.	Sarajevo, Yugoslavia

Part-Time Students

Ancelin, Jacqueline J.	Aisne, France
Brace, Russell F., A.B., M.D.	Aruba, Netherlands West Indies
Burroughs, Ann L., S.B.	Pittsford, Vt.
Cilliers, Anna M., B.SC.	Pretoria, South Africa
Connolly, John E., S.B.	Brookline, Mass.
Coyne, William J., A.B., S.M.	Roslindale, Mass.
Fleming, Elizabeth, A.B., M.D., M.P.H.	Beverly, Mass.
Kaylor, Mary L., S.B.	Ebensburg, Pa.
Mandell, Leonard C., S.B. IN MECH. ENGIN., M.MECH.ENGIN.	Cranston, R. I.
Mareuil, Amelia Boula	Aisne, France
Moran, M. Claire, S.B.	Cambridge, Mass.
Schroeder, Agnes H., S.B.	Cleveland Heights, Ohio
Skelley, Edna L., S.B.	Cambridge, Mass.
Smith, Fred E., S.B. IN CHEM.ENGIN., S.M. IN ENGIN.	Cambridge, Mass.
Veltrop, Ruth M., S.B.	Ames, Iowa

Walkley, Janet E., S.B.	Medford, Mass.
Zapenas, Mabel, S.B.	Lawrence, Mass.

DEGREES

On June 19, 1952, the following degrees were conferred:

Doctor of Public Health

Norman Everett Peatfield, A.B. (*Duke Univ.*) 1931, M.D. (*Tufts Coll.*) 1936, M.P.H. (*Harvard Univ.*) 1948
Thesis: Hepatitis and War
Special Field: Epidemiology

Doctor of Science in Hygiene

Rachel Agnes Beaudoin, S.B. (*Cornell Univ.*) 1941, M.Sc. (*Montreal Univ.*) 1945, S.M. in Hygiene (*Harvard Univ.*) 1951
Thesis: Dietary Intake and Carbohydrate Metabolism in Human Obesity
Special Field: Nutrition

Robert Shih-man Chang, B.Sc. (*St. John's Univ., Shanghai*) 1943, M.D. (*ibid.*) 1946
Thesis: The Specific Hemagglutination Inhibition Test in the Detection of Circulating Antigens in Epidemic Typhus and Tuberculous Infection of Man
Special Field: Microbiology

Master of Public Health, *Magna cum laude*

Richard Henry Daggy, S.B. (*Univ. of Minnesota*) 1934; S.M. (*ibid.*) 1938, Ph.D. (*ibid.*) 1941

Winifred Danaraj, L.M.S. (*King Edward VII Coll. of Medicine, Singapore*) 1938

Robert Henry Hamlin, A.B. (*Ohio State Univ.*) 1944, S.B. (*Northwestern Univ.*) 1945, M.B. (*ibid.*) 1946, M.D. (*ibid.*) 1947

Master of Public Health, *cum laude*

Stanley Chamberlain Best, B.A. (*Univ. of Toronto*) 1939, M.D. (*ibid.*) 1943

Johannes Holm, C.M. (*Univ. of Copenhagen*) 1928

Else Agatha Johanning, M.D. (*Univ. of Oslo*) 1948

Basil Douglas Bailey Layton, M.D. (*Univ. of Toronto*) 1931

Hugh Wayne Randel, S.B. (*Univ. of Oklahoma*) 1942, M.D. (*George Washington Univ.*) 1946

Ruth Roth, S.B. (*Carnegie Inst. of Technology*) 1937

Claire Frances Ryder, A.B. (*Radcliffe Coll.*) 1940, M.D. (*Tufts Coll.*) 1944

Donald Bunker Thomas, M.D. (*Univ. of Buffalo*) 1950
Stefano Vivona, M.D. (*St. Louis Univ.*) 1943

MASTER OF PUBLIC HEALTH

Ram Banda Abeysinghe, M.B.,B.S. (*Univ. of Ceylon*) 1943
Gerónimo Horacio Alvarez, M.D. (*Faculdad de Medicina, Buenos Aires*) 1945
Jean Copeland Avery, A.B. (*Wellesley Coll.*) 1939, M.D. (*Boston Univ.*) 1943
Bernardo Bedrikow, M.D. (*Univ. of São Paulo*) 1947
Jose Behm, M.D. (*Univ. of Chile*) 1939
John Frye Bell, A.B. (*Yale Univ.*) 1931, M.D. (*Harvard Univ.*) 1935
Franklin Leroy Bowling, S.B. (*Univ. of Colorado*) 1933, M.D. (*ibid.*) 1946, S.M. (*Univ. of Denver*) 1947
Halvecio Brandão, M.D. (*Univ. of Minas-Gerais, Brazil*) 1939
Edgar Lewis Cook, M.D. (*Georgetown Univ.*) 1949
Leslie Corsa, Jr., S.B. (*Massachusetts Inst. of Technology*) 1941, M.D. (*Harvard Univ.*) 1946
Ruth Clarke Cottrell, S.B. (*Simmons Coll.*) 1942
J. B. Couch, D.V.M. (*Agricultural and Mechanical Coll. of Texas*) 1939
Claudia Crownover, S.B. (*George Peabody Coll.*) 1945
Robert Wayne Day, D.V.M. (*Ohio State Univ.*) 1934
Patrick John DeFonseka, L.M.S. (*Ceylon Medical Coll.*) 1940
Emilie Julienne Deltombe, M.D. (*Univ. of Liege*) 1948
James Alexander Edgett, D.V.M. (*Univ. of Toronto*) 1938
Elizabeth Putnam Fleming, A.B. (*Mount Holyoke Coll.*) 1927, M.D. (*Cornell Univ.*) 1931
Grace Schissler Hussey, S.B. (*Univ. of Toledo*) 1934, M.D. (*Univ. of Cincinnati*) 1938
Alice Glenn Keaton, S.B. (*Univ. of Tennessee*) 1931, S.M. (*ibid.*) 1946
Konstantin Kwiesielewicz, M.B. (*Stephan Batory Univ., Poland*) 1934, M.D. (*ibid.*) 1938
Nicholas John Lavnikevich, S.B. (*Boston Univ.*) 1947
Frank E. Law, D.D.S. (*Univ. of Minnesota*) 1931
Esther Elizabeth Lipton, S.B. (*Columbia Univ.*) 1945
Lester Harold Lonergan, A.B. (*Union Coll.*) 1929, M.D. (*Coll. of Medical Evangelists*) 1931
Georg Leonhard Mangold, M.D. (*Univ. of Marburg*) 1946
Vincenzo Milella, M.D. (*Faculty of Medicine of Naples*) 1941
Madeleine Elizabeth Morcy, A.B. (*Syracuse Univ.*) 1943, M.D. (*New York Medical Coll.*) 1947
James Peter Pappas, A.B. (*Harvard Univ.*) 1929, M.D. (*Tufts Coll.*) 1934
Natesaier Purshottam, M.B.,B.S. (*Madras Medical Coll.*) 1940, S.M. (*Univ. of Colorado*) 1951

Mabel Ross, S.B. (*Univ. of Iowa*) 1930, M.D. (*ibid.*) 1932
Enrico Scerrino, M.D. (*Univ. of Palermo*) 1939
Frances Nelle Shoun, S.B. (*East Tennessee State Coll.*) 1935, S.M. (*Univ. of Tennessee*) 1938
Conrad Warren Smith, A.B. (*Lincoln Univ.*) 1941, M.D. (*Howard Univ.*) 1944
Harold Stein, A.B. (*Williams Coll.*) 1945, M.D. (*Syracuse Univ.*) 1948
Bruce Dixson Storrs, M.D. C.M. (*McGill Univ.*) 1940
Arcot Ramaswamy Sunder Rao, M.B.,B.S. (*Univ. Medical Coll., Mysore*) 1940, D.P.H. (*All India Inst. of Hygiene and Public Health*) 1945
Kichinosuke Tatai, M.D. (*Univ. of Tokyo*) 1940
Yuzo Toyama, M.D. (*Keio Univ.*) 1936
Tatsuhiko Tsuji, M.D. (*Univ. of Tokyo*) 1940
Maya Stromberg Unna, M.D. (*Univ. of Vienna*) 1936
Hans Joachim Urban, M.D. (*Univ. of Berlin and Munich*) 1943
Jeanne Elizabeth Wright, A.B. (*Smith Coll.*) 1941

Master of Industrial Health

Lawrence Calvert Arnett, S.B. IN E.E. (*Howard Univ.*) 1940, M.D. (*New York State Univ.*) 1950
George Harold Flessas, S.B. (*Univ. of Massachusetts*) 1946, M.D. (*Boston Univ.*) 1948
Walter Wallace Gilbert, M.D. (*Univ. of Oregon*) 1925
Kamakhya Prasad Mitra, B.SC. (*Univ. of Calcutta*) 1936, M.B.,B.S. (*ibid.*) 1942, D.P.H. (*ibid.*) 1948

Master of Science in Hygiene

(in the field of epidemiology)

John Truesdale Boyd, M.B., B.CH. (*Queens Univ., Belfast*) 1944, D.P.H. (*ibid.*) 1949
James Scoular McKenzie-Pollock, M.B., CH.B. (*Univ. of Glasgow*) 1942, D.P.H. (*ibid.*) 1948
Perez Yekutiel, M.D. (*Univ. of Rome*) 1935, D.T.M.&H. (*Univ. of Liverpool*) 1938

(in the field of industrial hygiene)

Arthur Charles Pabst, CHEM.ENGIN. (*Brooklyn Polytechnic Inst.*) 1932, M.CHEM.ENGIN. (*ibid.*) 1937

(in the field of maternal and child health)

Hastings Elwin Axel Carson, M.B.,B.S. (*Charing Cross Hospital Medical School, London*) 1946, D.P.H. (*Univ. of London*) 1950, M.D. (*ibid.*) 1951

(IN THE FIELD OF MICROBIOLOGY)

William Daniel Kundin, S.B. (*Univ. of Maryland*) 1950
Shirley Jenkins Phelps, A.B. (*Fisk Univ.*) 1945
Peter Skaliy, A.B. (*Brown Univ.*) 1938
Thomas George White, S.B. (*Univ. of Oklahoma*) 1948

(IN THE FIELD OF PUBLIC HEALTH PRACTICE)

Sophia Bloom, PH.B. (*Univ. of Chicago*) 1931, A.M. (*ibid.*) 1943

(IN THE FIELD OF TROPICAL PUBLIC HEALTH)

Jack William Millar, A.B. (*Stanford Univ.*) 1945, M.D. (*George Washington Univ.*) 1947, M.P.H. (*Harvard Univ.*) 1951

On March 9, 1953, the following degrees were conferred:

DOCTOR OF PUBLIC HEALTH

Carl Ernest Taylor, S.B. (*Muskingum Coll.*) 1937, M.D. (*Harvard Univ.*) 1941, F.R.C.P. (*Canada*) 1946, M.P.H. (*Harvard Univ.*) 1951
Thesis: Synergism and Antagonism Between Diseases
Special Field: Epidemiology

MASTER OF PUBLIC HEALTH

Lorraine Vogel, A.B. (*Cornell Univ.*) 1950

MASTER OF SCIENCE IN HYGIENE

(IN THE FIELD OF HEALTH EDUCATION)

Christian Seikichi Nakama, A.B. (*Univ. of Hawaii*) 1949, M.S.A. (*Loyola Univ.*) 1952
James Charles Roumas, S.B. (*Tufts Coll.*) 1948, S.M. (*Univ. of Tennessee*) 1951

(IN THE FIELD OF NUTRITION)

Louis Charles Fillios, A.B. (*Harvard Univ.*) 1948

FALL TERM — FIRST PERIOD (September 28 to November 21, 1953)

Course	*Credit Units*
Public Health	
1a Ecology: Biological and Social *	3
Biostatistics	
1a, b Principles of Biostatistics *	2 (4) †
Epidemiology	
3a Clinical Infectious Diseases	.5
15a, b Advanced Epidemiology	1–2 (2–4)
Industrial Hygiene	
2a, b Industrial Air Analysis	2 (4)
Maternal and Child Health	
1a, b Basic Problems	2 (4)
Microbiology	
1a, b Principles of Bacteriology and Immunology	1 (2)
12a Biological Products in Public Health	1
Nutrition	
1a Public Health Nutrition	1.5
6a Nutrition Seminar	.5
Physiology	
1a, b Human Physiology and Its Application to Public Health	1 (2)
Public Health Practice	
4a Control of Cancer	2
5a Control of Tuberculosis	2
Sanitary Engineering	
1a, b Principles of Sanitation **	2 (4)
2a, b Sanitary Bacteriology	2.5 (5)

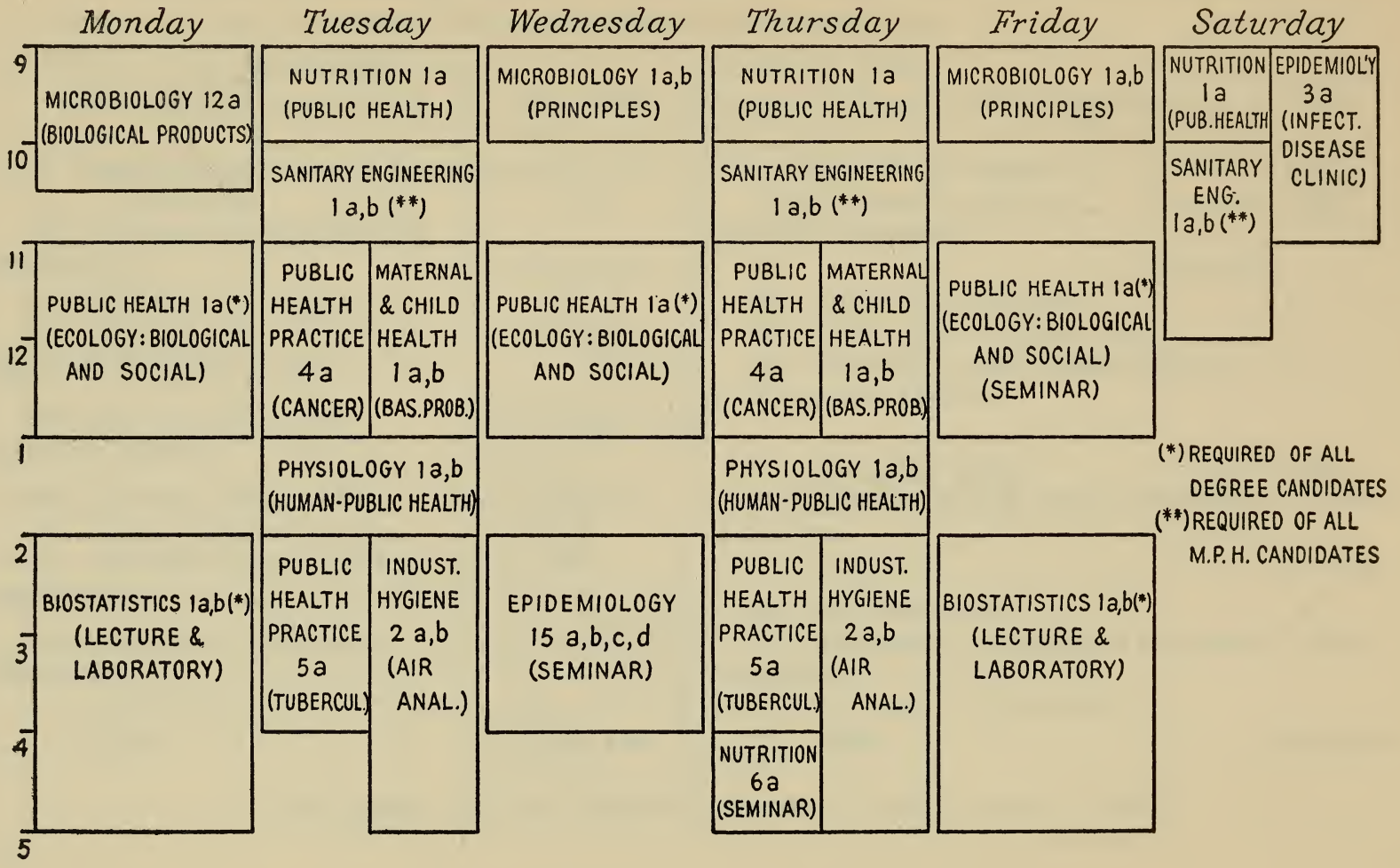
Unscheduled courses: Microbiology 2a,b; Sanitary Bacteriology 2a,b. (See Department for description)

* Required of all degree candidates

** Required of all M.P.H. candidates

† Figures in parentheses are units for entire course, if this runs longer than one period

Fall Term--First Period *September 28 to November 21, 1953*



(*) REQUIRED OF ALL DEGREE CANDIDATES

(**) REQUIRED OF ALL M.P.H. CANDIDATES

FALL TERM — SECOND PERIOD (November 23, 1953 to January 30, 1954)

Course	*Credit Units*
Biostatistics	
1a, b Principles of Biostatistics *	2 (4) †
Epidemiology	
1b Principles of Epidemiology *	2.5
3b Clinical Infectious Diseases	.5
15a, b Advanced Epidemiology	1–2 (2–4)
Industrial Hygiene	
2a, b Industrial Air Analysis	2 (4)
Maternal and Child Health	
1a, b Basic Problems	2 (4)
2b Problems and Services	1
Microbiology	
1a, b Principles of Bacteriology and Immunology	1 (2)
11b Public Health Laboratory Procedures	3
Nutrition	
2b, c Biochemistry and Physiology of Nutrition	2 (4.5)
6b Nutrition Seminar	.5
Physiology	
1a, b Human Physiology and Its Application to Public Health	1 (2)
Public Health Practice	
1b Principles of Public Health Practice **	3
2b Organization of Medical Care	2
3b Psychosocial Problems	1
Sanitary Engineering	
1a, b Principles of Sanitation **	2 (4)
2a, b Sanitary Bacteriology	2.5 (5)

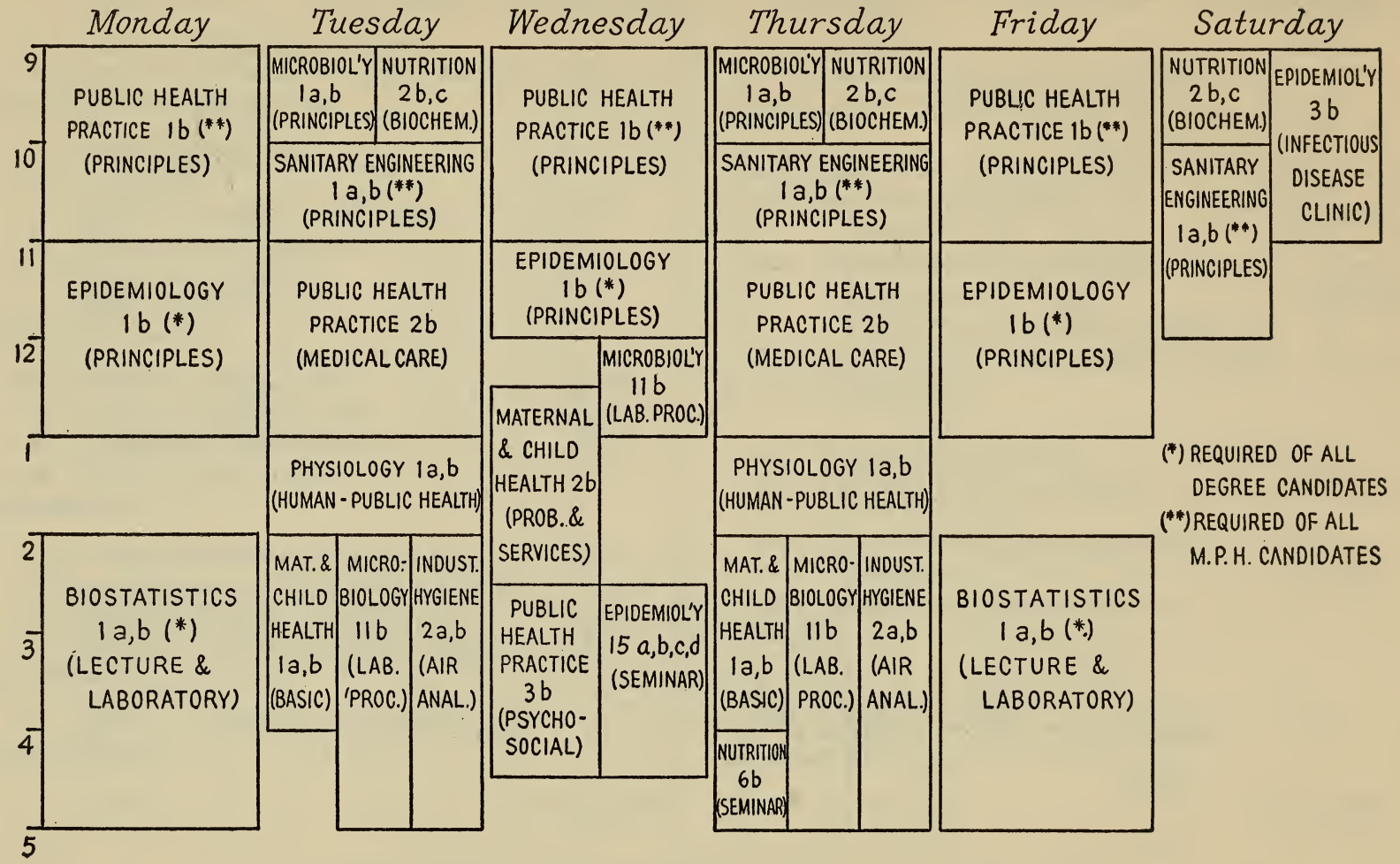
Unscheduled courses: Microbiology 2a,b; P.H. Practice 32b; Sanitary Bacteriology 2a,b. (See Department for description)

* Required of all degree candidates

** Required of all M.P.H. candidates

† Figures in parentheses are units for entire course, if this runs longer than one period

Fall Term -- Second Period *November 23, 1953, to January 30, 1954*



(*) REQUIRED OF ALL DEGREE CANDIDATES

(**) REQUIRED OF ALL M.P.H. CANDIDATES

SPRING TERM — THIRD PERIOD (February 8 to April 3, 1954)

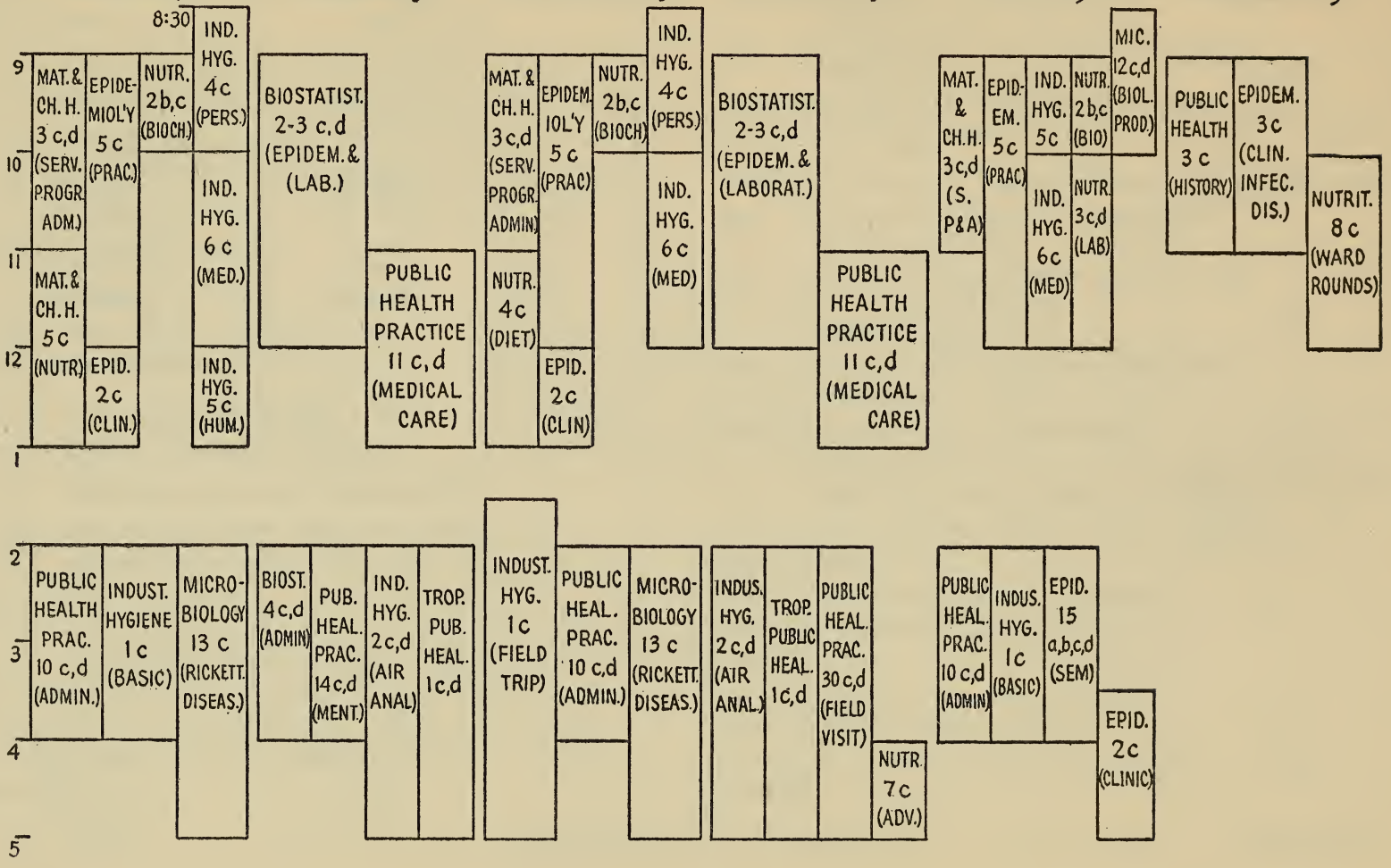
Course	*Credit Units*
Public Health	
3c History and Philosophy of Public Health	1
Biostatistics	
2c, d Statistical Analysis (Epidemiological)	2 (3) †
3c, d Statistical Analysis (Laboratory)	2 (3)
4c, d Administrative Use of Statistics (with M.C.H. 4c, d and P.H.P. 12c, d)	1 (2)
Epidemiology	
2c Clinical Epidemiology	1.5
3c Clinical Infectious Diseases	.5
5c Practice of Epidemiology	3
15c, d Advanced Epidemiology	2–3 (4–6)
Industrial Hygiene	
1c Basic Problems	3
2c, d Industrial Air Analysis	2 (4)
4c Personnel Administration	1.5
5c Human Problems of Adjustment in Industry	1
6c Industrial Medicine	3
Maternal and Child Health	
3c, d Services, Programs and Administration	3 (5)
5c Maternal and Child Nutrition	1

Course	*Credit Units*
Microbiology	
12c, d Biological Products in Public Health	1 (2)
13c Rickettsial Diseases	3
Nutrition	
2b, c Biochemistry and Physiology of Nutrition	2.5 (4.5)
3c, d The Laboratory Basis of Nutrition	1 (2)
4c Dietary Evaluation	1
7c Advanced Topics in Nutrition	.5
8c Nutrition Ward Rounds	.5
Public Health Practice	
10c, d Public Health Administration, Health Education, Public Health Nursing and Social Work	3 (6)
11c, d Administration of Medical-Care Programs	2 (4)
14c, d Mental Health Problems	1 (2)
30c, d Field Study in Administration	(1.5)
Tropical Public Health	
1c, d Conservation of Health in Tropical Countries	2.5 (5)

Unscheduled courses: Biostat. 5c,d; Ind. Hyg. 3c,d; Microb. 2c,d, 15c,d; P.H.P. 7c,d; 15c,d; 32c; San. Eng. 3c,d; T.P.H. 5c,d. (See Department for description)

† Figures in parentheses are units for entire course, if this runs longer than one period

Spring Term -- Third Period February 8 to April 3, 1954



SPRING TERM — FOURTH PERIOD (April 12 to June 5, 1954)

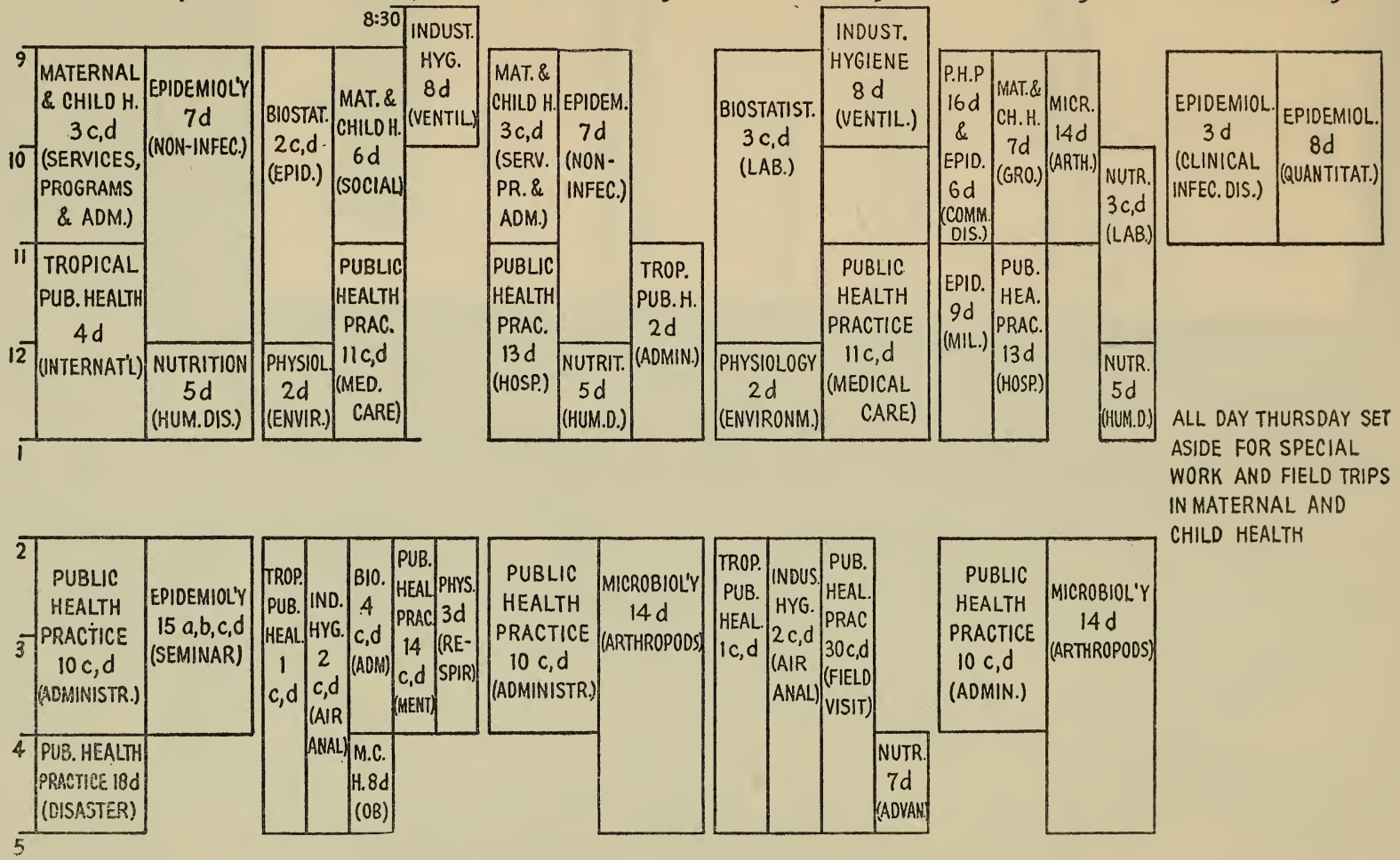
Course	*Credit Units*
Biostatistics	
2c, d Statistical Analysis (Epidemiological)	1 (3) †
3c, d Statistical Analysis (Laboratory)	1 (3)
4c, d Administrative Use of Statistics (with M.C.H. 4c, d and P.H.P. 12c, d)	1 (2)
Epidemiology	
3d Clinical Infectious Diseases	.5
7d Non-Infective Mass Disease and Injury	2
8d Quantitative Method in Epidemiology	1
9d Military Preventive Medicine	1
15c, d Advanced Epidemiology	2–3 (4–6)
Industrial Hygiene	
2c, d Industrial Air Analysis	2 (4)
8d Hygienic Aspects of Ventilation	1.5
Maternal and Child Health	
3c, d Services, Programs and Administration	2 (5)
6d Social Problems and Available Social Services for Children	1
7d Physical Growth and Development	1
8d Recent Advances in Obstetrical Care	1
Microbiology	
14d Arthropods in Relation to Human Disease (with T.P.H. 3d)	3

Course	*Credit Units*
Nutrition	
3c, d The Laboratory Basis of Nutrition	1 (2)
5d Human Nutritional Disease	1.5
7d Advanced Topics in Nutrition	.5
Physiology	
2d Environmental Physiology	1
3d Respiratory Problems in Industry	1
Public Health Practice	
10c, d Public Health Administration, Health Education, Public Health Nursing and Social Work	3 (6)
11c, d Administration of Medical-Care Programs	2 (4)
13d Hospital Organization and Community Relationships	2
14c, d Mental Health Problems	1 (2)
16d Control of Communicable Disease (with Epidemiology 6d)	1
18d Community Organization for Disaster	.5
30c, d Field Study in Administration	(1.5)
Tropical Public Health	
1c, d Conservation of Health in Tropical Countries	2.5 (5)
2d Administration of Tropical Public Health Programs (with P.H.P. 17d)	1
4d International Aspects of Tropical Public Health	1

Unscheduled courses: Biostat. 5c,d; Ind. Hyg. 3c,d; 40d; Microb. 2c,d; 12c,d; 15c,d; P.H.P. 6d; 7c,d; 8d; 15c,d; 32d; San. Eng. 3c,d; T.P.H. 5c,d; 40d. (See Department for description)

† Figures in parentheses are units for entire course, if this runs longer than one period

Spring Term *Fourth Period* *April 12 to June 5, 1954*



ALL DAY THURSDAY SET ASIDE FOR SPECIAL WORK AND FIELD TRIPS IN MATERNAL AND CHILD HEALTH

KEY TO AERIAL VIEW

I School of Public Health, 55 Shattuck Street
Administration, Departments of Biostatistics, Industrial Hygiene, Maternal and Child Health, Physiology and Public Health Practice

A Administration Building, Medical School
Second Floor, Library

B, C, D, E Laboratories and Classrooms, Medical School
Building E2, Room 238, Department of Tropical Public Health

F Vanderbilt Hall
Student Health Office, 251 Longwood Avenue

II Peter Bent Brigham Hospital

III and V Children's Hospital

IV Lying-in Hospital

VI School of Public Health, Huntington Building, 695 Huntington Avenue, Departments of Epidemiology, Nutrition and Microbiology

A
B
C
D
E
F
I
II
III
IV
V
VI

VE
RI
TAS